MERCED COMPOSITE SQUADRON 147

N9554G

Cessna

MORE PEOPLE BUY AND FLY CESSNA AIRPLANES THAN ANY OTHER MAKE

1972

WORLD'S LARGEST PRODUCER OF GENERAL AVIATION AIRCRAFT SINCE 1956

Stationair

OWNER'S MANUAL

PERFORMANCE - SPECIFICATIONS

	* Stationair
GROSS WEIGHT	**3600 lbs**
SPEED, BEST POWER MIXTURE:	
Top Speed at Sea Level	**174 mph**
Cruise, 75% Power at 6500 ft	**164 mph**
RANGE, NORMAL LEAN MIXTURE:	
Cruise, 75% Power at 6500 ft	**650 mi**
63 Gallons, No Reserve	**4.0 hrs**
	163 mph
Cruise, 75% Power at 6500 ft	**830 mi**
80 Gallons, No Reserve	**5.1 hrs**
	163 mph
Optimum Range at 10,000 ft	**800 mi**
63 Gallons, No Reserve	**6.1 hrs**
	131 mph
Optimum Range at 10,000 ft	**1020 mi**
80 Gallons, No Reserve	**7.8 hrs**
	131 mph
RATE OF CLIMB AT SEA LEVEL	**920 fpm**
SERVICE CEILING	**14, 800 ft**
TAKE-OFF:	
Ground Run	**900 ft**
Total Distance Over 50-foot Obstacle.	**1780 ft**
LANDING:	
Landing Roll	**735 ft**
Total Distance Over 50-foot Obstacle	**1395 ft**
STALL SPEED:	
Flaps Up, Power Off	**70 mph**
Flaps Down, Power Off	**61 mph**
EMPTY WEIGHT (Approximate).	
Cargo Version - Single Seat	**1750 lbs**
Deluxe Version - Six Seats	**1850 1bs**
USEFUL LOAD (Approximate).	
Cargo Version - Single Seat	**1850 1bs**
Deluxe Version - Six Seats	**1750 1bs**
WING LOADING: Pounds/@ Foot	**20.7**
POWER LOADING: POW~S/HP	**12.0**
FUEL CAPACITY: Total	
Standard Tanks.	**65 gal.**
Optional Long Range Tanks	**84 gal.**
OIL CAPACITY: Total	**12 qts**
PROPELLER: 2-Bladed Constant Speed (Dia)	**82 inches**
ENGINE:	
Continental Fuel Injection Engine	**IO - 520- F**
300 rated BHP at 2850 RPM (5-Minute Take-Off Rating)	
285 rated BHP at 2700 RPM (Maximum Continuous Rating)	

Performance with a 3-bladed propeller is essentially the same as above.

Note: Speed performance data is shown for a standard deluxe version airplane equipped with speed fairings, which increase the speed by one mph.

* **This manual covers operation of the Stationair which is certificated as Model U206F under FAA Type Certificate No. A4CE.**

CONGRATULATIONS . . . . . .

Welcome to the ranks of Cessna owners1 Your Cessna has been designed and constructed to give you the most in performance, economy, and comfort. It is our desire that you will find flying it, either for business or pleasure, a pleasant and profitable experience.

This Owner's Manual has been prepared as a guide to help you get the most pleasure and utility from your Stationair. It contains information about your Cessna's equipment, operating procedures, and performance; and suggestions for its servicing and care. We urge you to read it from cover to cover, and to refer to it frequently.

Our interest in your flying pleasure has not ceased with your purchase of a Cessna. World-wide, the Cessna Dealer Organization backed by the Cessna Service Department stands ready to serve you. The following services are offered by most Cessna Dealers:

THE CESSNA WARRANTY -- It is designed to provide you with the most comprehensive coverage possible:

- **a. No exclusions**
- **b. Coverage includes parts and labor**
- **c. Available at Cessna Dealers world wide**
- **d. Best in the industry**

Specific benefits and provisions of the warranty plus other important benefits for you are contained in your Warranty and Owner's Service Policy Booklet supplied with your aircraft. Warranty service is available to you at any authorized Cessna Dealer throughout the world upon presentation of your Warranty and Owner's Service Policy Booklet which establishes your eligibility under the warranty.

FACTORY TRAINED PERSONNEL to provide you with courteous expert service.

FACTORY APPROVED SERVICE EQUIPMENT to provide you with the most efficient and accurate workmanship possible.

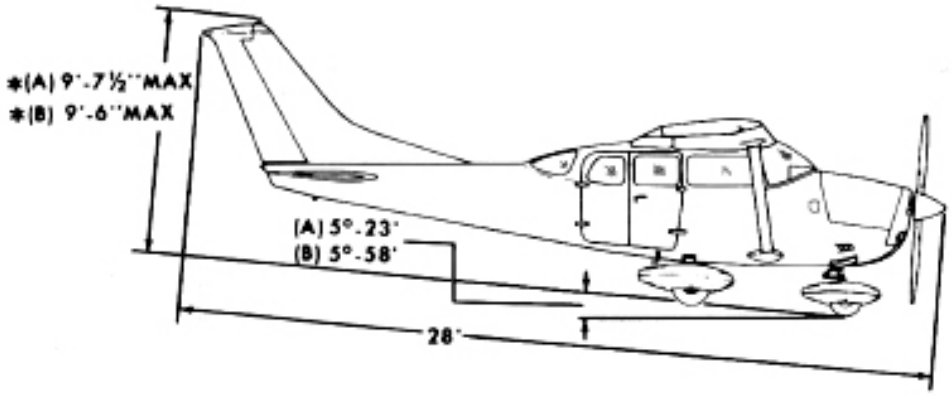
A STOCK OF GENUINE CESSNA SERVICE PARTS on hand when you need them.

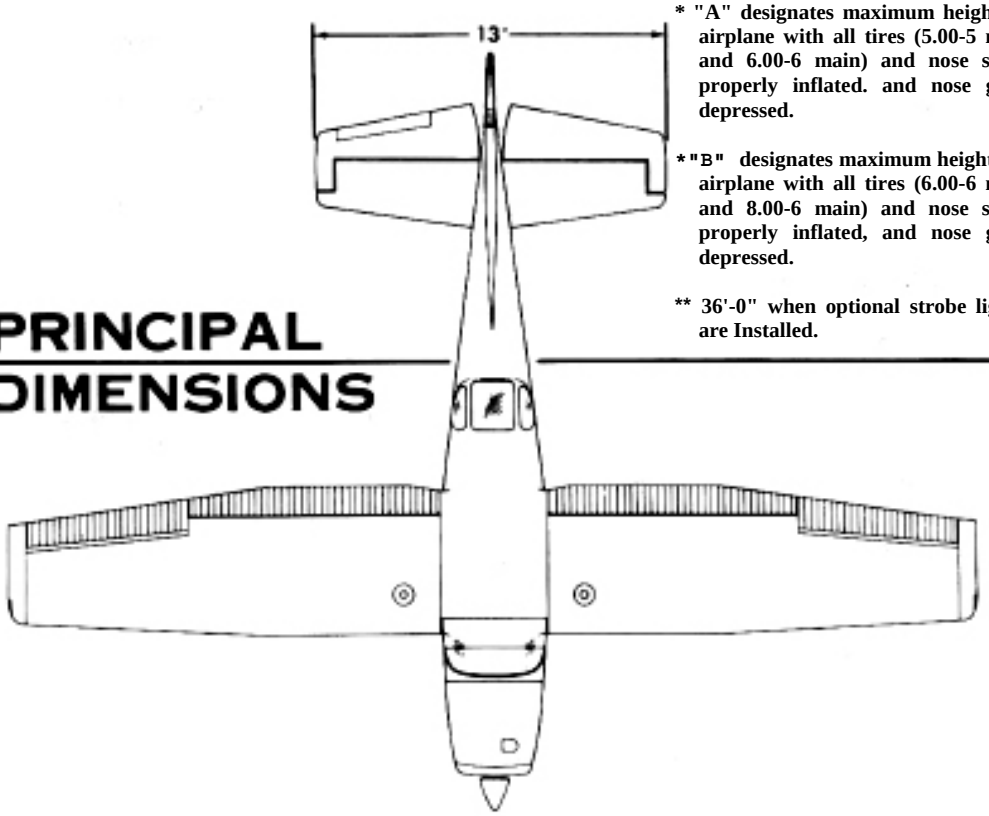
THE LATEST AUTHORITATIVE INFORMATION FOR SERVICING CESSNA AIRPLANES, since Cessna Dealers have all of the Service Manuals and Parts Catalogs, kept current by Service Letters and Service News Letters, published by Cessna Aircraft Company.

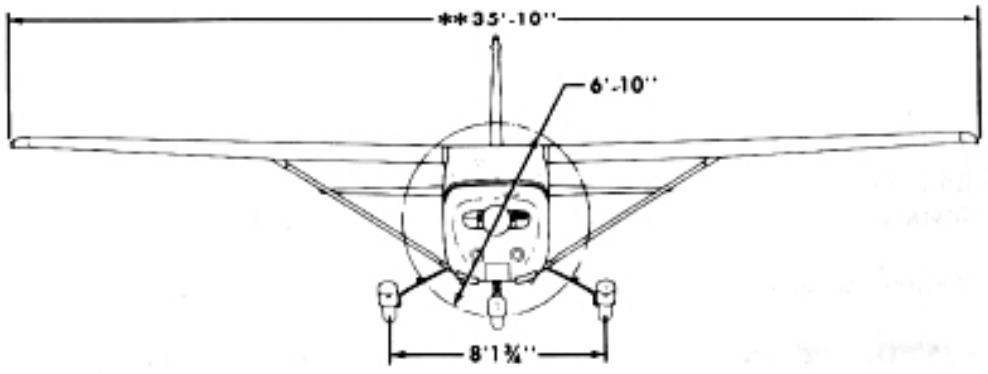
We urge all Cessna owners to use the Cessna Dealer Organization to the fullest.

A current Cessna Dealer Directory accompanies your new airplane. The Directory is revised frequently, and a current copy can be obtained from your Cessna Dealer. Make your Directory one of your cross- country flight planning aids; a warm welcome awaits you at every Cessna Dealer.

PRINCIPAL DIMENSIONS







*** "A" designates maximum height of airplane with all tires (5.00-5 nose and 6.00-6 main) and nose strut properly inflated. and nose gear depressed.**

***"B" designates maximum height of airplane with all tires (6.00-6 nose and 8.00-6 main) and nose strut properly inflated, and nose gear depressed.**

**** 36'-0" when optional strobe lights are Installed.**

TABLE OF CONTENTS

Section I

OPERATING CHECK LIST

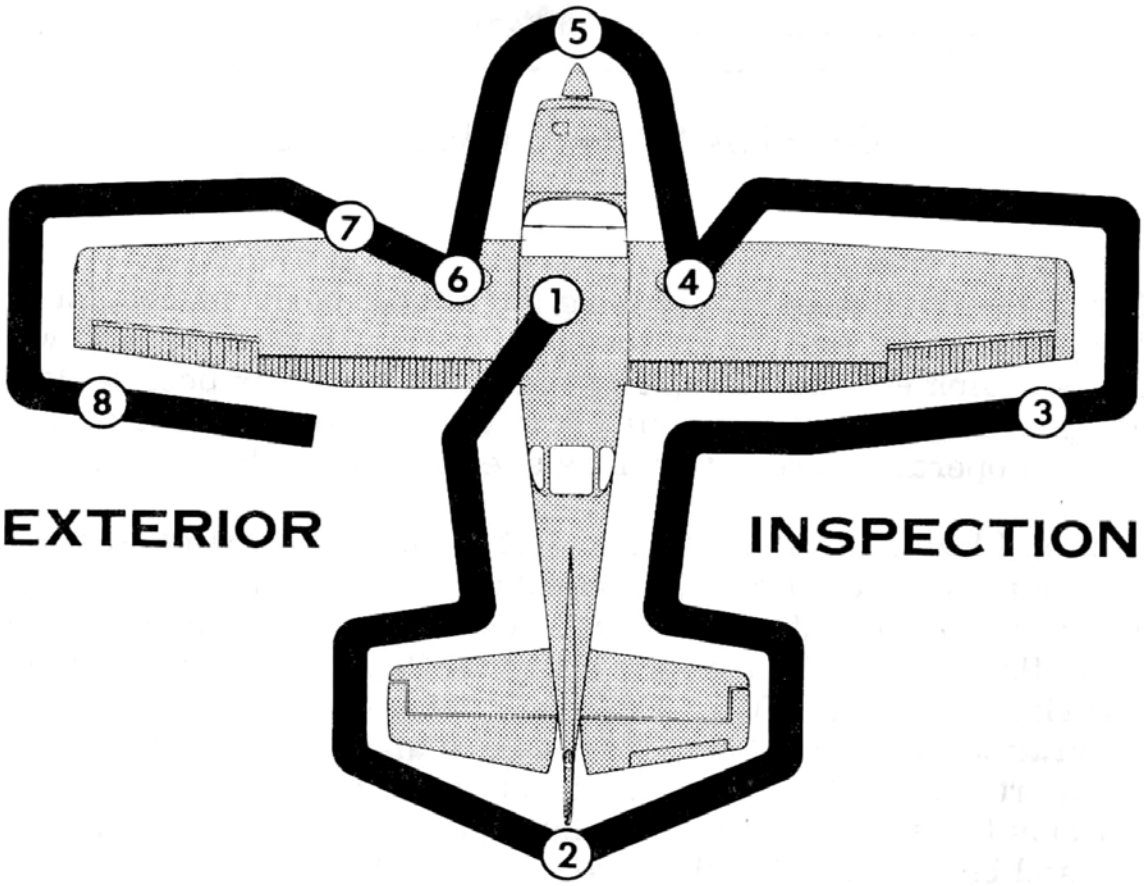
One of the first steps in obtaining the utmost performance, service, and flying enjoyment from your Cessna is to familiarize yourself with your airplane's equipment, systems, and controls. This can best be done by reviewing this equipment while sitting in the airplane. Those items whose function and operation are not obvious are covered in Section 11.

Section I lists, in Pilot's Check List form, the steps necessary to operate your airplane efficiently and safely. It is not a check list in its true form as it is considerably longer, but it does cover briefly all of the points that you should know for a typical flight. An abbreviated check list covering the "Before Take-Off" and "Before Landing" phases of aircraft operation is provided on a plastic card and normally stowed in the map compartment. This abbreviated check list is a convenient reference of key items to be rechecked immediately prior to taxiing into position for take-off and before entering the final approach for landing.

The flight and operational characteristics of your airplane are normal in all respects. There are no "unconventional" characteristics or operations that need to be mastered. All controls respond in the normal way within the entire range of operation. All airspeeds mentioned in Sections I, II and III are indicated airspeeds. Corresponding calibrated airspeeds may be obtained from the Airspeed Correction Table in Section VI.

BEFORE ENTERING THE AIRPLANE.

(1) Make an exterior inspection in accordance with figure 1-1.



Note

Visually check aircraft for general condition during walk-around inspection. In cold weather, remove even small accumulations of frost, ice or snow from wing, tail and control surfaces. Also, make sure that control surfaces contain no internal accumulations of ice or debris. If night flight is planned, check operation of all lights, and make sure a flashlight is available.

1) **a. Remove control wheel lock.**
   b. Check ignition switch off.
   c. Turn on master switch and check fuel quantity indicators; then turn off master switch.
   d. Check that fuel selector valve handle is on fuller tank.
2) **a. Remove rudder gust lock, if installed.**
   b. Disconnect tail tie-down.
   c. Check control surfaces for freedom of movement and security.

Figure

d. Check cargo doors securely latched and locked (right side only). If cargo load will not permit access to the front cargo door inside handle, lock the door from the outside by means of the T handle stored in the map compartment.

IMPORTANT

The cargo doors must be fully closed and latched before operating the electric wing flaps. A switch in the upper door sill of the front cargo door interrupts the wing flap electrical circuit when the front door is opened or removed, thus preventing the flaps being lowered with possible damage to the cargo door or wing flaps when the cargo door is open. If operating with the cargo doors removed and the optional spoiler kit installed, check that the wing flap interrupt switch cover plate is installed so that the wing flaps can be lowered in flight.

3 a. Check aileron for freedom of movement and security.

4 a. Disconnect wing tie-down.
b. Check fuel tank vent opening for stoppage.
c. Check main wheel tire for proper inflation.
d. Visually check fuel quantity; then check fuel filler cap secure.

5 a. Inspect flight instrument static source opening on side of fuselage for stoppage (both sides).
b. Check propeller and spinner for nicks and security, and propeller for oil leaks.
c. Check nose wheel strut and tire for proper inflation.
d. Disconnect nose tie-down.
e. Check oil level. Do not operate with less than nine quarts. Fill to twelve quarts for extended flight.
f. Before first flight of day and after each refueling, pull out strainer drain knob for about four seconds, to clear fuel strainer of possible water and sediment. Check strainer drain closed. If water is observed, there is a possibility that the wing tank sumps contain water. Thus, the wing tank sump drain plugs and fuel reservoir drain plugs should be removed to check for the presence of water.

6 a. Check main wheel tire for proper inflation.
b. Visually check fuel quantity; then check fuel filler cap secure.

7 a. Remove pitot tube cover, if installed, and check pitot tube opening for stoppage.
b. Disconnect wing tie-down.
c. Check fuel tank vent opening for stoppage.

8 a. Check aileron for freedom of movement and security.

BEFORE STARTING THE ENGINE.

(1) Seats, Seat Belts and Shoulder Harnesses -- Adjust and lock.
(2) Brakes -- Test and set.
(3) Master Switch -- "ON. "
(4) Cowl Flaps -- "OPEN. " (Move lever out of locking hole to reposition.)
(5) Fuel Selector -- Fuller tank.
(6) Radios and Electrical Equipment -- Off.

STARTING ENGINE.

(1) Mixture -- fill rich.
(2) Propeller -- High RPM.
(3) Throttle -- Closed.
(4) Auxiliary Fuel Pump Switch -- On "LO. I'

NOTE
The auxiliary fuel pump will not operate until the ignition switch is turned to the "START" position.

(5) Ignition Key -- "START."
(6) Slowly advance throttle.
(7) Release ignition key when engine starts.

NOTE
If engine fails to continue running, start again from step (3).

(8) Reset throttle to desired idle speed.
(9) Auxiliary Fuel Pump Switch -- Off.
(10) Oil Pressure -- Check.

BEFORE TAKE-OFF.

(1) Parking Brake -- Set.
(2) Cowl Flaps -- Check full "OPEN.
(3) Flight Controls -- Check for free and correct movement.

(4) Elevator and Rudder Trim -- "TAKE-OFF" setting.
(5) Throttle Setting -- 1700 RPM.
(6) Magnetos -- Check (50 RPM maximum differential between magnetos)
(7) Propeller -- Cycle from high to low RPM; return to high RPM (full in).
(8) Engine Instruments -- Check.
(9) Ammeter -- Check.
(10) Suction Gage --Check in green arc (4.6 to 5.4 inches of mercury).
(11) Flight Instruments and Radios -- Set.
(12) Optional Autopilot or Wing Leveler -- Off.
(13) Cabin Doors and Window -- Closed and locked.

TAKE-OFF.

NORMAL TAKE-OFF.

(1) **Wing Flaps -- *0"* to 20".**
(2) **Power -- Full throttle and 2850 RPM.**
(3) **Mixture -- Lean for field elevation per fuel flow indicator placard.**
(4) **Elevator Control -- Lift nose wheel at 60 MPH.**
(5) **Climb Speed -- 90 to 100 MPH until all obstacles are cleared, then set up climb speed as shown in "NORMAL CLIMB" check list.**
(6) **Wing Flaps -- Retract (if extended) after obstacles are cleared.**

MAXIMUM PERFORMANCE TAKE-OFF.

(1) Wing Flaps -- 20'.
(2) Brakes -- Apply.
(3) Power -- Full throttle and 2850 RPM.
(4) Mixture -- Lean for field elevation per fuel flow indicator placard.
(5) Brakes -- Release.
(6) Elevator Control -- Maintain slightly tail-low attitude.
(7) Climb Speed -- 78 MPH until all obstacles are cleared, then set up climb speed as shown in "MAXIMUM PERFORMANCE CLIMB" check list.
(8) Wing Flaps -- Retract (after obstacles are cleared and 90 MPH is reached).

NOTE

Do not reduce power until wing flaps have been retracted.

CLIMB.

NORMAL CLIMB.

(1) Airspeed -- 110 to 120 MPH.
(2) Power -- 25 inches and 2550 RPM.
(3) Mixture -- Lean to 18.0 gal/hr. fuel flow.
(4) Cowl Flaps -- Open a s required.

MAXIMUM PERFORMANCE CLIMB.

(1) Airspeed -- 100 MPH (sea level) to 93 MPH (10,000 feet).
(2) Power -- Full throttle and 2700 RPM.
(3) Mixture -- Lean for altitude per fuel flow indicator placard.
(4) Cowl Flaps - - Full "OPEN. "

CRUISING.

(1) Power -- 15-25 inches of manifold pressure and 2200-2550 RPM.
(2) Cowl Flaps -- Open as required.
(3) Elevator and Rudder Trim -- Adjust.
(4) Mixture -- Lean for cruise fuel flow as determined from your Cessna Power Computer or the OPERATIONAL DATA in Section VI.

LET-DOWN.

(1) Power -- As desired.
(2) Mixture -- Lean for smoothness for power descents. Use full rich mixture for idle power.
(3) Cowl Flaps -- "CLOSED. "

BEFORE LANDING.

(1) Fuel Selector -- Fuller tank.
(2) Mixture -- Rich.
(3) Propeller -- High RPM.
(4) Wing Flaps -- Down 0"-10" (below 160 MPH), 10"-40' (below 120 MPH).
(5) Airspeed -- 85-95 MPH (flaps retracted), 75-85 MPH (flaps extended).
(6) Elevator Trim -- Adjust for landing.

BALKED LANDING (GO-AROUND).

(1) **Power '- Full throttle and 2850 RPM.**
(2) **Wing Flaps -- Retract to 20".**
(3) **Cowl Flaps -- "OPEN. 'l**
(4) **Upon reaching an airspeed of approximately 90 MPH, retract flaps slowly.**

NORMAL LANDING.

(1) Landing Technique -- Conventional for all flap settings.

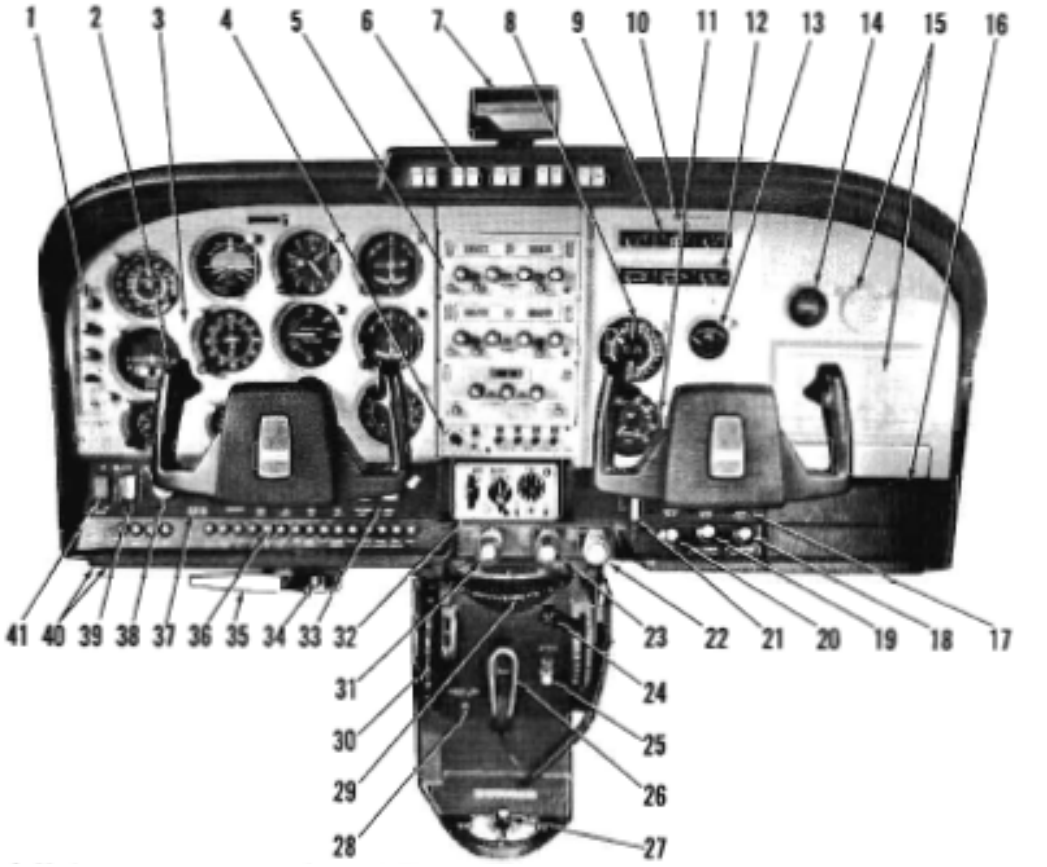
AFTER LANDING.

(1) Cowl Flaps -- "OPEN."
(2) Wing Flaps -- Retract.

SECURING AIRCRAFT.

(1) Parking Brake -- Set.
(2) Radios and Electrical Equipment -- Off.
(3) Mixture -- Idle cut -off (pulled full out).
(4) Ignition and Master Switch -- Off.
(5) Control Lock -- Installed.

INSTRUMENT PANEL



1. Marker Beacon Indicator Lights and Switches (Opt.)
2. Elevator Trim Switch (Opt.)
3. Flight Instrument Grwp
4. Transponder (Opt.)
5. Radios (Opt.)
6. Radio Selector Switches (Opt.)
7. Rear View Mirror (Opt.)
8. Manifold Pressure/Fuel Flow Indicator
9. Fuel Quantity Indicators and Ammeter
10. Over-Voltage Warning Light **11.** Tachometer
12. Cylinder Head Temperature, Oil Temperature, and Oil Pressure Gages
13. Economy Mixture Indicator (OD~.)
14. Flight Hour Recorder (Opt.)
15. Optional Radio and Instrument Space
16. Map Compartment
17. Cabin Heat, Cabin Air, and Defrost Control Knobs
18. Auxiliary Cabin Air Control **Knob**
19. Stowable Rudder Pedal Control (Opt.)
20. Cigar Lighter
21. Wing Flap Switch and Indicator
22. Mixture Control Knob
23. Propeller control Knob
24. Cowl Flap Control Handle
25. Engine Primer (Opt.)
26. Microphone (Opt.)
27. Fuel Selector Valve **Handle**
28. Electric Elevator Trim Circuit Breaker Switch (Opt.)
29. Rudder Trim Control Wheel
30. Elevator Trim Control Wheel
31. Throttle
32. Autopilot Control Unit (Opt.)
33. Eledrical Switches
34. Alternate Static Source Valve (Opt.)
35. Parking Brake Handle
36. Clrcuit Breakers
37. Radio and Instrument Panel Light Rheostat Control Knobs
38. Ignition/Stuter Switch
39. Auxiliary Fuel **hvnp** Switch
40. Phone and Auxiliary Mike Jack Locations
41. Master switch

Section II

DESCRIPTION AND OPERATING DETAILS

The following paragraphs describe the systems and equipment whose function and operation is not obvious when sitting in the airplane. This section also covers in somewhat greater detail some of the items listed in Check List form in Section I that require further explanation.

FUEL SYSTEM.

Fuel is, supplied to the engine from two tanks, one in each wing. Usable fuel in each tank, for all flight conditions, is 31.5 gallons for standard tanks and 40 gallons for long range tanks.

NOTE

Unusable fuel is at a minimum due to the design of the fuel system. However, with 1/4 tank or less, prolonged uncoordinated flight such as slips or skids can uncover the fuel tank outlets, causing fuel starvation and engine stoppage. Therefore, with low fuel reserves, do not allow the airplane to remain in uncoordinated flight for periods in excess of one minute.

Fuel from each tank flows through a fuel reservoir tank to the fuel selector valve. Depending upon the setting of the selector valve, fuel from the left or right tank flows through a by-pass in the electric auxiliary fuel pump (when it is not operating) and fuel strainer to the engine driven fuel pump. From here fuel is distributed to the engine cylinders via a fuel control unit and manifold.

NOTE

Fuel cannot be used from both fuel tanks simultaneously.

Vapor and excess fuel from the engine-driven fuel pump and fuel control

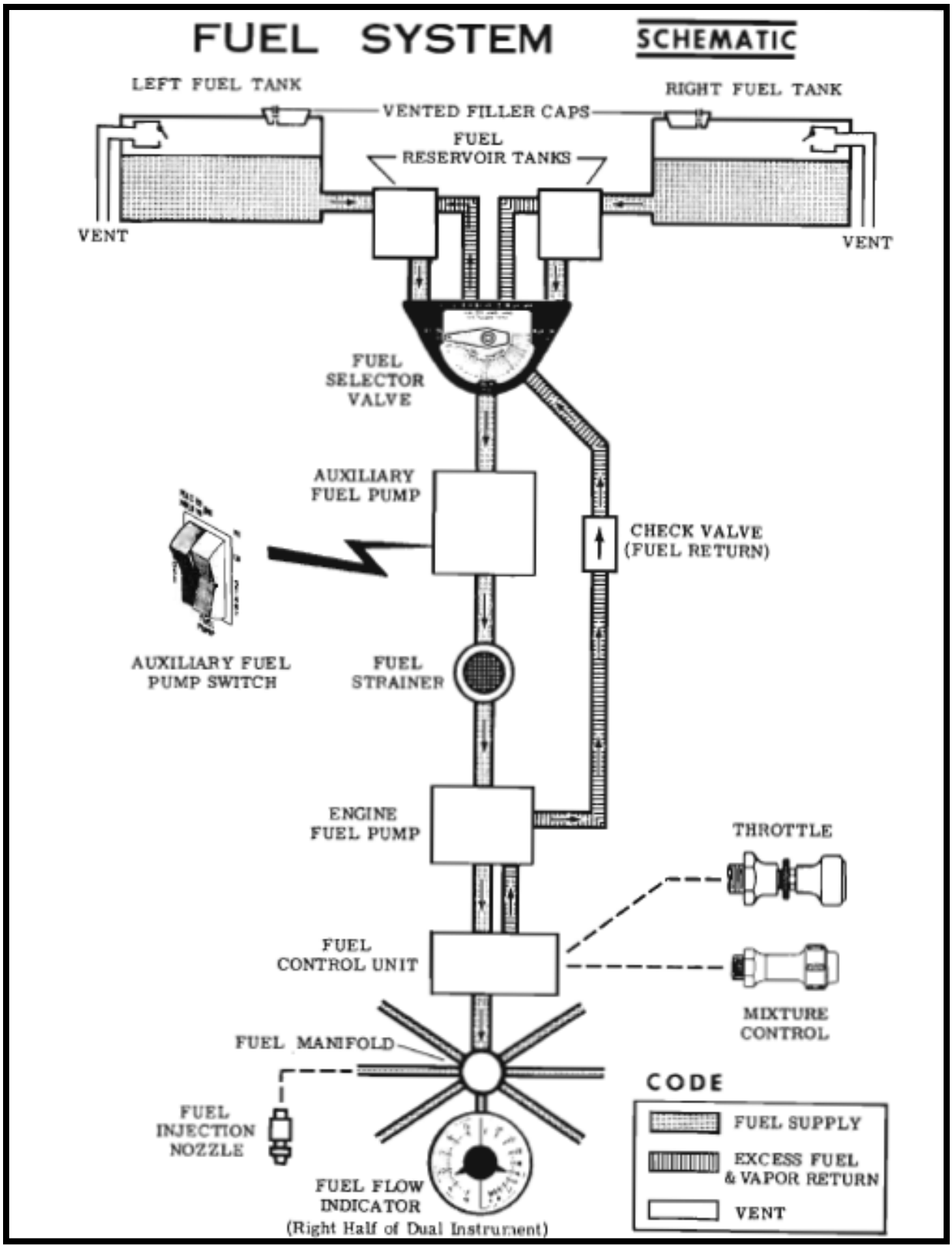


Figure 2-2.

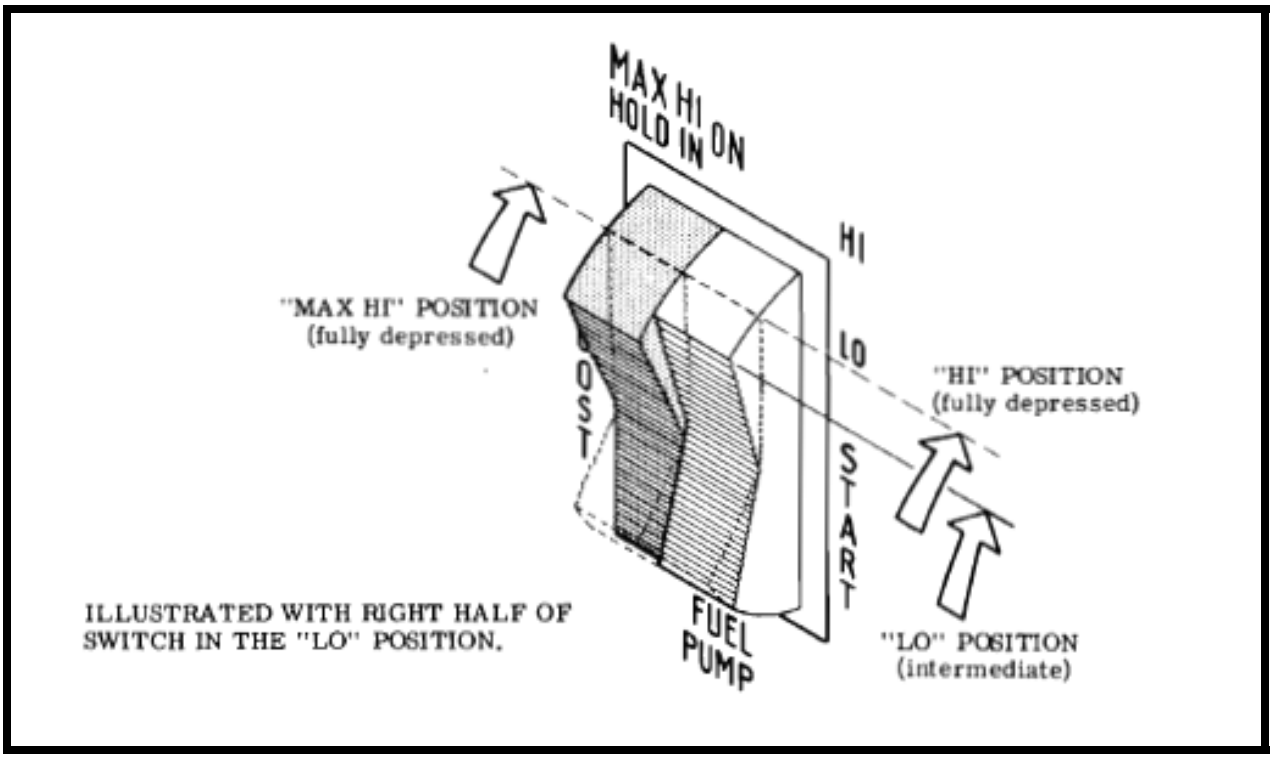
unit are returned by way of the selector valve to the reservoir tank of the wing tank system being used.

AUXILIARY FUEL PUMP SWITCH.

The fuel pump switch is a split-rocker type; the right half positions are "HI, " "LO" and off and the left positions are "MAX HI" and off. The right half of the switch incorporates an intermediate "LO" position used for normal starting, and a '"HI" position (when the top of the switch is fully depressed) for vapor purging during hot engine starts.

Maximum fuel flow is produced when the left half of the switch is held in the spring-loaded "MAX HI" position. In the "MAX HI" position, an interlock within the switch automatically trips the right half of the switch to its "HI" position. When the spring-loaded left half of the switch is released, the right half will remain in the "HI" position until manually returned to the off position.

With the right half of the switch in the "LO" position, and the ignition starter switch turned to "START, " the auxiliary fuel pump will operate at a low flow rate (providing proper fuel mixture for starting) as the engine is being turned over with the starter.



NOTE

The auxiliary fuel pump will not operate in the "LO" position until the ignition switch is turned to "START."

With the right half of the switch in the "HI" position, the pump operates at one of two flow rates that are dependent upon the setting of the throttle. With the throttle open to a cruise setting, the pump is operating at a high capacity to supply sufficient fuel flow to maintain flight. When the throttle is moved toward the closed position (as during letdown, landing and taxiing), the fuel pump flow rate is automatically reduced, preventing an excessively rich mixture during these periods of reduced engine speed.

When the engine-driven fuel pump is functioning and the auxiliary fuel pump is turned on "HI, " a fuel/air ratio considerably richer than best power is produced unless the mixture is leaned.

If it is desired to completely exhaust a fuel tank quantity in flight, the auxiliary fuel pump will be needed to assist in restarting the engine when fuel exhaustion occurs. Therefore, it is recommended that proper operation of the auxiliary fuel pump be verified prior to running a fuel tank dry by turning the auxiliary fuel pump on momentarily and checking for a slight rise in fuel flow indication.

To ensure a prompt engine restart in flight after running a fuel tank dry, immediately switch to a tank containing fuel at the first indication of fuel pressure fluctuation and/or power loss. Then place the right half of the auxiliary fuel pump switch in the "HI" position momentarily (3 to 5 seconds) with the throttle at least 1/2 open. Excessive use of the "HI" position at high altitude and full rich mixture can cause flooding of the engine as indicated by a short (1 to 2 seconds) period of power followed by a loss of power. This can later be detected by a fuel flow indication accompanied by a lack of power. If flooding does occur, turn off the auxiliary fuel pump switch, and normal propeller windmilling should start the engine in 1 to 2 seconds.

If the propeller should stop (possible at very low airspeeds) before the tank containing fuel is selected, place the auxiliary fuel pump switch in the "HI" position and advance the throttle promptly until the fuel flow indicator registers approximately 1/2 way into the green arc for 1 to 2 seconds duration. Then retard the throttle, turn off the auxiliary fuel pump, and use the starter to turn the engine over until a start is obtained.

If the auxiliary fuel pump switch is accidentally on "HI" (with master switch on) with the engine stopped, the intake manifolds will be flooded.

ELECTRICAL SYSTEM.

Electrical energy is supplied by a 14-volt, direct-current system powered by an engine-driven alternator (see figure 2-4). An optional 28- volt direct current system is also available and is discussed in Section VII, Optional Systems. The 14-volt system utilizes a 12-volt battery which is located on the upper left-hand forward portion of the firewall. Power is supplied to all electrical circuits through a split bus bar, one side containing electronic system circuits and the other side having general electrical circuits. Both sides of the bus are on at all times except when either an external power source is connected or the starter switch is turned on; then a power contactor is automatically activated to open the circuit to the electronics bus. Isolating the electronic circuits in this manner prevents harmful transient voltages from damaging the transistors in the electronics equipment.

MASTER SWITCH.

The master switch is a split-rocker type switch labeled "MASTER," and is "ON" in the up position and off in the down position. The right half of the switch, labeled "BAT," controls all electrical power to the airplane. The left half, labeled "ALT," controls the alternator.

Normally, both sides of the master switch should be used simultaneously; however, the "BAT" side of the switch could be turned "ON" separately to check equipment while on the ground. The "ALT" side of the switch, when placed in the off position, removes the alternator from the electrical system. With this switch in the off position, the entire electrical load is placed on the battery, and all non-essential electrical equipment should be turned off for the remainder of the flight.

AMMETER.

The ammeter indicates the flow of current, in amperes, from the alternator to the battery or from the battery to the aircraft electrical

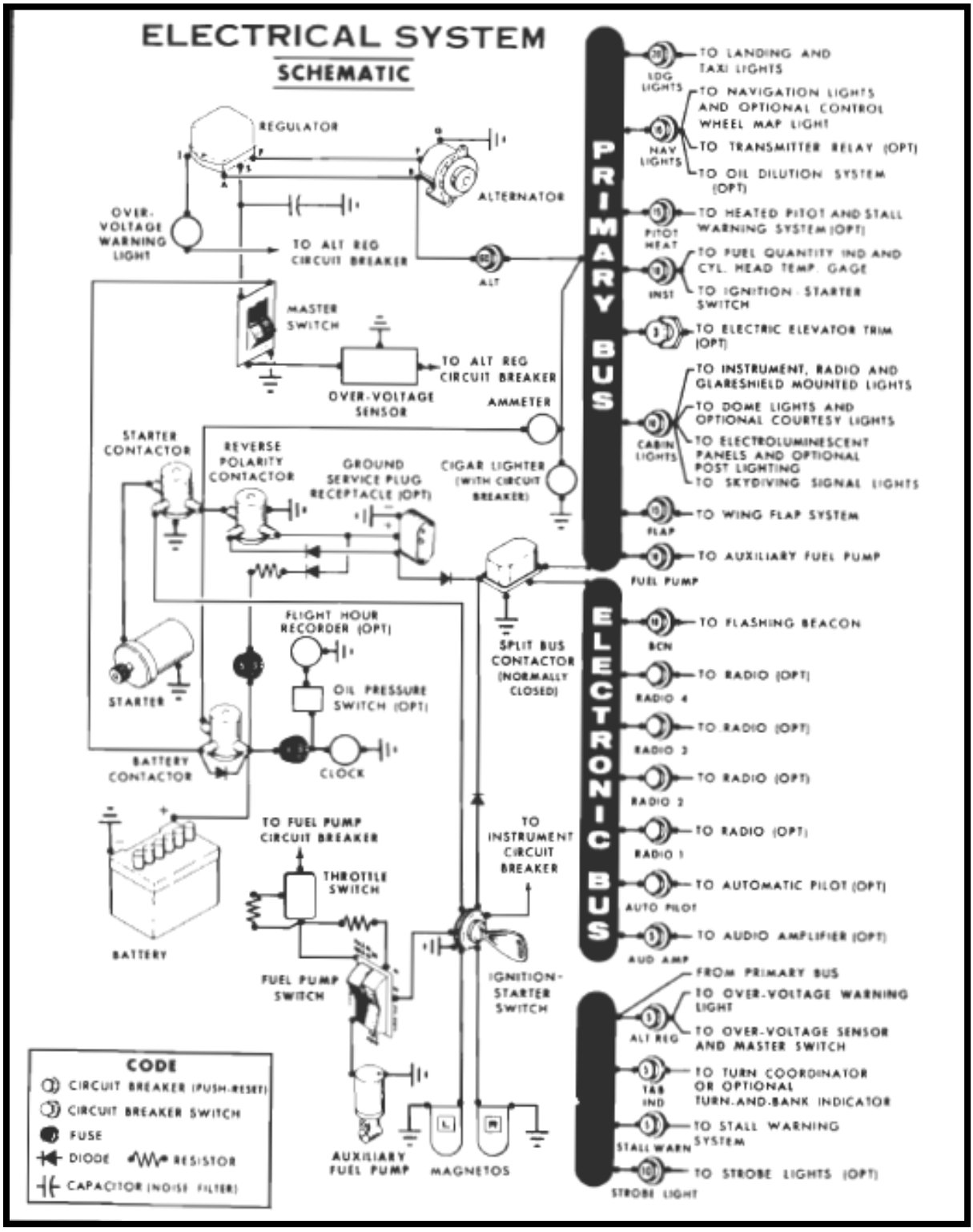


Figure 2-4

system. When the engine is operating and the master switch is "ON, " the ammeter indicates the charging rate applied to the battery. In the event the alternator is not functioning or the electrical load exceeds the output of the alternator, the ammeter indicates the discharge rate of the battery.

OVER-VOLTAGE SENSOR AND WARNING LIGHT.

The air craft is equipped with an automatic over-voltage protection system consisting of an over-voltage sensor behind the instrument panel and a red warning light, labeled "HIGH VOLTAGE, " near the ammeter.

In the event an over-voltage condition occurs, the over-voltage sensor automatically removes alternator field current and shuts down the alternator. The red warning light will then turn on, indicating to the pilot that the alternator is not operating and the aircraft battery is supplying all electrical power.

The over-voltage sensor may be reset by turning the master switch off and back on again. If the warning light does not illuminate, normal alternator charging has resumed; however, if the light does illuminate again, a malfunction has occurred, and the flight should be terminated as soon as practical.

The over-voltage warning light may be tested by momentarily turning off the "ALT" portion of the master switch and leaving the "BAT" portion turned on.

CIRCUIT BREAKERS AND FUSES.

Most of the electrical circuits in the airplane are protected by "push-to-reset" circuit breakers mounted on the left side of the instrument panel. Exceptions to this are the battery contactor closing (external power) circuit which has a fuse mounted near the ground service plug receptacle, and the clock and optional flight hour recorder circuits which have a fuse mounted near the battery. Also the cigar lighter is protected by a manually-reset type circuit breaker mounted directly on the back of the lighter behind the instrument panel. The optional electric elevator trim system is protected by a switch type circuit breaker mounted on the control pedestal near the elevator trim wheel.

When more than one radio is installed, the radio transmitter relay

(which is a part of the radio installation) is protected by the navigation lights circuit breaker labeled "NAV LIGHTS". If a malfunction in the navigation lights system causes the circuit breaker to open, de-activating the lights and transmitter relay, turn off the navigation light switch and reset the circuit breaker. This will re-activate the transmitter relay and permit its usage. Do not turn the switch on again until the malfunction is corrected.

EXTERIOR LIGHTING.

Standard exterior lighting consists of navigation lights on the wing tips and stinger, a flashing beacon on top of the vertical fin, and landing and taxi lights mounted in the nose cap. Optional lighting includes a strobe light on each wing tip and a courtesy light under each wing just outboard of the cabin. The courtesy lights are operated by a switch located on the aft side of the rear door post. To turn on the lights, push up on the switch labeled "UTILITY LIGHTS. " All exterior lights, except the courtesy lights, are controlled by rocker type switches on the left switch and control panel. The switches are "ON" in the up position and turned off in the down position.

The flashing beacon should not be used when flying through clouds or overcast; the flashing light reflected from water droplets or particles in the atmosphere, particularly at night, can produce vertigo and loss of orientation.

The two high intensity strobe lights will enhance anti-collision protection. However, the lights should be turned off when taxiing in the vicinity of other aircraft, or during flight through clouds, fog or haze.

INTERIOR LIGHTING.

Instrument and control panel lighting is provided by electroluminescent Lighting, flood lighting, optional post lighting, and integral lighting. Two concentric rheostat control knobs, labeled "LWR PANEL, ENG-RADIO," and a rheostat control knob labeled "INSTRUMENTS" control the intensity

of instrument and control panel lighting. A rocker-type switch labeled "POST-FLOOD LIGHTS" is used to select either standard flood lighting or optional post lighting. These controls are located on the left switch and control panel.

Switches and controls on the lower part of the instrument panel are lighted by electroluminescent panels which do not require light bulbs for illumination. This lighting is controlled by the inner intensity control knob labeled "LWR PANEL".

Instrument panel flood lighting consists of four lights located in the glare shield above the instrument panel and two lights in the overhead console. To use flood lighting, place the "POST-FLOOD LIGHTS" selector switch in the "FLOOD LIGHTS" position and adjust light intensity with the "INSTRUMENTS" control knob.

The instrument panel may be equipped with optional post lights which are mounted at the edge of each instrument or control and provide direct lighting. The lights are operated by placing the "POST-FLOOD LIGHTS" selector switch in the "POST" position and adjusting intensity with the "INSTRUMENTS" control knob. Switching to post lights will automatically turn off flood lighting.

The magnetic compass, engine instrument cluster, radios and radio selector switches have integral lighting and operate independently of post or flood lighting. Compass light intensity is controlled by the "INSTRUMENTS" control knob. Integral lighting in the engine instrument cluster and radios is controlled by the "ENG-RADIO" control knob. For information concerning radio selector switch lighting, refer to Section VII.

The control pedestal and optional overhead oxygen console are lighted separately by post lights. This lighting is controlled by the "ENG-RADIO" control knob.

Map lighting may be provided by two different sources: standard overhead console map lights and an optional control wheel map light. The console map lights operate in conjunction with instrument panel flood lighting and consist of two additional openings just aft of the overhead console flood light openings. These openings have sliding covers controlled by small round knobs. To use the map lights, slide the covers open by moving the two knobs toward each other. Close the covers when the map lights are no longer required. The optional map light mounted on the bottom of the pilot's control wheel illuminates the lower portion of the cabin in front of the pilot slid is used when checking maps and other flight data during night

operation. To operate the light, turn on the "NAV" light switch and adjust the map light intensity with the rheostat control knob on the back of the control wheel pad on the right side.

The cabin interior is lighted by two dome lights, one above each center side window. The lights are operated by a two position switch, labeled "UTILITY LIGHTS, " on the aft side of the rear door post. This switch also operates the exterior courtesy lights simultaneously with dome Light operation.

CABIN HEATING, VENTILATING AND DEFROSTING SYSTEM.

The temperature and volume of airflow into the cabin can be regulated to any degree desired by manipulation of the push-pull "CABIN HEAT" and "CABIN AIR" knobs. Additional outside air for summer ventilation is provided through the heat and vent system by operation of the push-pull "AUX CABIN AIR" knob. The rotary type "DEFROST' knob regulates the airflow for windshield defrosting.

Front cabin heat and ventilating air is supplied by outlet holes spaced across a cabin manifold just forward of the pilot's and copilot's feet. Rear cabin heat and air is supplied by two ducts from the manifold, one extending down each side of the cabin to an outlet at the front door post area at floor level. Windshield defrost air is also supplied by a duct leading from the cabin manifold.

Separate adjustable ventilators supply additional air; one near each upper corner of the windshield supplies air for the pilot and copilot, and four in the rear cabin ceiling supply air to the rear seat passengers.

SHOULDER HARNESSES.

Shoulder harnesses are standard equipment for the pilot and front seat passenger, and optional equipment for the center and aft passengers. Each front seat harness is attached just aft of the forward side window and is stowed above the window. When stowed, the harness is held

in place by two retaining clips, one above the door and one on the front of the forward window post. When stowing the harness, place it behind both retaining clips and secure the loose end behind the retaining clip above the door. The optional center and aft seat shoulder harnesses are attached above the windows. Each harness is stowed behind a retaining clip.

To use the shoulder harnesses, fasten and adjust the seat belt first. Remove the harness from the stowed position, and lengthen as required by pulling on the end of the harness and the narrow release strap. Snap the harness metal stud firmly into the retaining slot adjacent to the seat belt buckle. Then adjust to length by pulling down on the free end of the harness. A properly adjusted harness will permit the occupant to lean forward enough to sit completely erect, but is tight enough to prevent excessive forward movement and contact with objects during sudden deceleration. Also, the pilot will want the freedom to reach all controls easily.

Releasing and removing the shoulder harness is accomplished by pulling upward on the narrow release strap, and removing the harness stud from the slot in the seat belt buckle. In an emergency, the shoulder harness may be removed by releasing the seat belt first, and then pulling the harness over the head by pulling up on the release strap.

STARTING ENGINE.

Proper fuel management and throttle adjustments are the determining factors in securing an easy start from your continuous-flow fuel-injection engine. The procedure outlined in Section I should be followed closely as it is effective under nearly all operating conditions, including hot and cold weather conditions. Slight variations from this procedure may be necessary at times to compensate for extreme conditions.

The right half of the fuel pump switch is normally placed in the "LO" position prior to starts with a cold engine in normal ambient air temperatures. Slowly advance the throttle while cranking the engine and release the ignition key after the engine starts. If the engine falters after running for a brief period of time (2 to 3 seconds), use the "HI" position of the right half of the switch momentarily to clear vapor from lines.

When the engine is hot or outside air temperatures are high, the engine may die after running several seconds because the mixture became

either too lean due to fuel vapor, or too rich due to excessive prime fuel. The following procedure will prevent over-priming and alleviate fuel vapor in the system:

(1) Set the throttle 1/3 to 1/2 open.
(2) When the ignition key is on "BOTH" and you are ready to engage the starter, place the right half of the fuel pump switch on "HI" until the indicated fuel flow comes up to 4 to 6 gal/hr; then turn off the switch.

NOTE

During a restart after a brief shutdown in extremely hot weather, the presence of fuel vapor may require the auxiliary fuel pump to operate on "HI" for up to 1 minute or more before the vapor is cleared sufficiently to obtain4 to 6 gal/hr for starting. If the above procedure does not obtain sufficient fuel flow, fully depress and hold the left half of the switch in the "MAX HI" position to obtain additional fuel pump capability.

(3) Without hesitation, engage the starter and the engine should start in 3 to 5 revolutions. Adjust throttle for 1200 to 1400 RPM.
(4) If there is fuel vapor in the lines, it will pass into the injector nozzles in 2 to 3 seconds and the engine will gradually slow down and stop. When engine speed starts to decrease, hold the left half of the auxiliary fuel pump switch in the "MAX HI" position for approximately one second to clear out the vapor. Intermittent use of "MAX HI" boost is necessary since prolonged use of the "MAX HI" position after vapor is cleared will flood out the engine during a starting operation.
(5) Let the engine run at 1200 to 1400 RPM until the vapor is eliminated and the engine idles normally.

If prolonged cranking i s necessary, allow the starter motor to cool at frequent intervals, since excessive heat may damage the armature.

TAXIING.

Taxiing over loose gravel or cinders should be done at low engine speed to avoid abrasion and stone damage to the propeller tips. Refer to figure 2-5 for additional taxiing instructions.

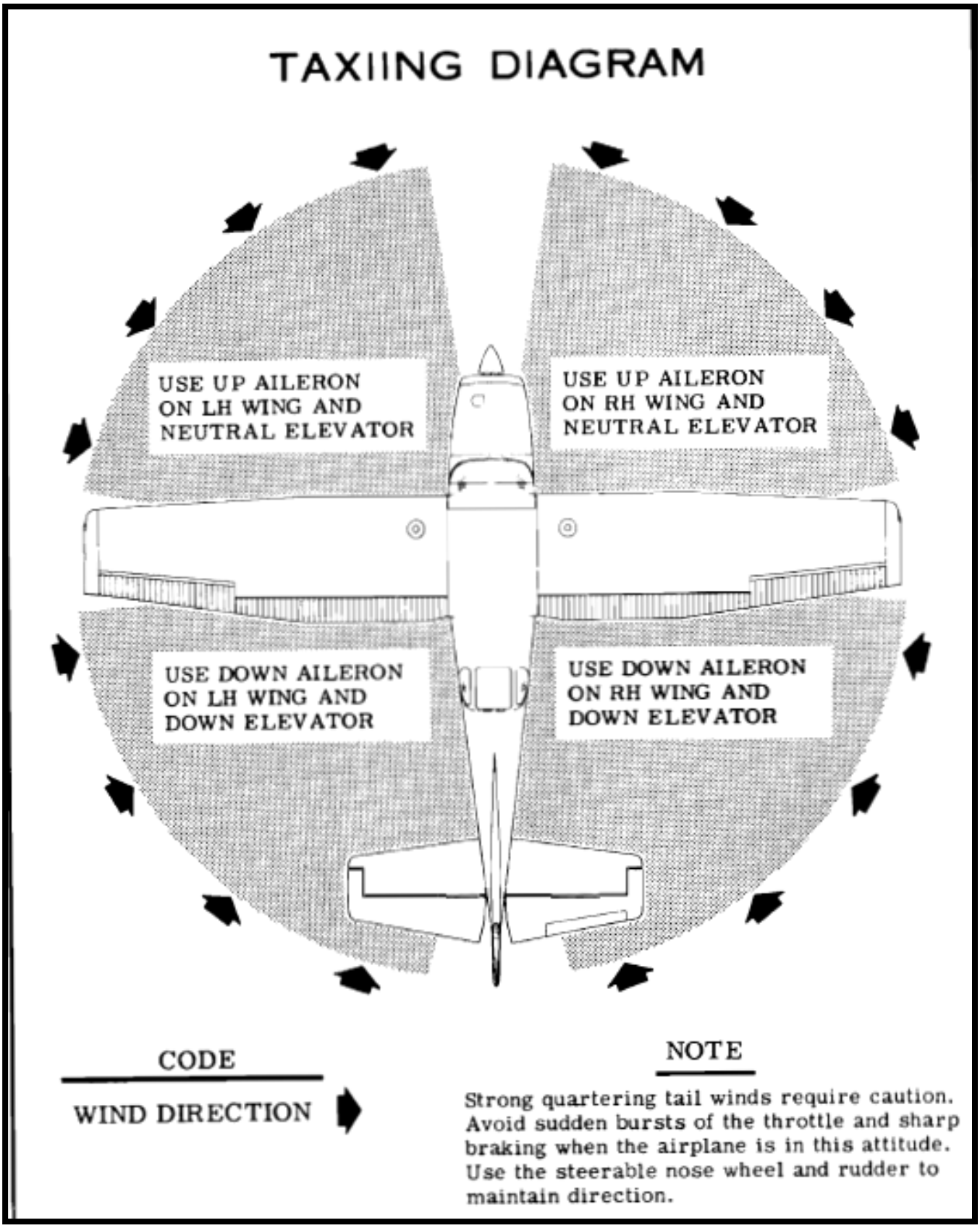


Figure 2-5

BEFORE TAKE-OFF.

Since the engine is closely cowled for efficient in-flight cooling, precautions should be taken to avoid overheating on the ground. Full throttle checks on the ground are not recommended unless the pilot has good reason to suspect that the engine is not turning up properly.

The magneto check should be made at 1700 RPM with the propeller in flat pitch as follows: Move the ignition switch first to "R" position and note RPM. Then move switch back to "BOTH position to clear the other set of plugs. Then move switch to "L" position, note RPM and return to "BOTH". The difference between the two magnetos operated singly should not be more than 50 RPM. If there is a doubt concerning the operation of the ignition system, RPM checks at a higher engine speed will usually confirm whether a deficiency exists.

An absence of RPM drop may be an indication of faulty grounding of one side of the ignition system or should be cause for suspicion that the magneto timing is set in advance of the setting specified.

Prior to flights where verification of proper alternator and voltage regulator operation is essential (such as night or instrument flights), a positive verification can be made by loading the electrical system momentarily (3 to 5 seconds) with the landing light during the engine runup (1700 RPM). The ammeter will remain within a needle width of zero if the alternator and voltage regulator are operating properly.

TAKE- OFF.

It is important to check full-throttle engine operation early in the takeoff run. Any signs of rough engine operation or sluggish engine acceleration is good cause for discontinuing the take-off.

Full throttle runups over loose gravel are especially harmful to propeller tips. When take-offs must be made over a gravel surface, it is very important that the throttle be advanced slowly. This allows the airplane to start rolling before high RPM is developed, and the gravel will be blown back of the propeller rather than pulled into it.

For maximum engine power, the mixture should be adjusted during the initial take-off roll to the fuel flow corresponding to the field elevation. (Refer to Maximum Performance Take-Off and Climb Settings placard

located adjacent to fuel flow indicator.) The power increase is significant above 3000 feet and this procedure always should be employed for field elevations greater than 5000 feet above sea level.

Using 20' wing flaps reduces the ground run and total distance over the obstacle by approximately 10 per cent. Soft field take-offs are performed with 20' flaps by lifting the nose wheel off the ground as soon as practical and leaving the ground in a slightly tail-low attitude. However, the airplane should be leveled off immediately to accelerate to a safe climb speed.

If 20" wing flaps are used for take-off, they should be left down until all obstacles are cleared. To clear an obstacle with 20' flaps, a 78 MPH climb speed should be used. If no obstructions are ahead, a best flaps up rate-of-climb speed of 100 MPH would be most efficient. Flap deflections greater than 20° are not recommended at any time for take-off.

Take-offs into strong crosswinds normally are performed with the minimum flap setting necessary for the field length, to minimize the drift angle immediately after take-off. The airplane is accelerated to a speed slightly higher than normal, then pulled off abruptly to prevent possible settling back to the runway while drifting. When clear of the ground, make a coordinated turn into the wind to correct for drift.

ENROUTE CLIMB.

A cruising climb at 25 inches of manifold pressure, 2550 RPM and 110 to 120 MPH is recommended to save time and fuel for the overall trip. In addition, this type of climb provides better engine cooling, less engine wear, and more passenger comfort due to lower noise level.

Cruising climbs should be conducted at approximately 18.0 GPH up to 5000 feet and at 1 GPH more than the normal lean fuel flow shown on the Cessna Power Computer at higher altitudes and lower power.

If it is necessary to climb rapidly to clear mountains or reach favorable winds at high altitudes, the best rate-of-climb speed should be used with maximum continuous power (full throttle and 2700 RPM). This speed is 100 MPH at sea level, decreasing approximately 1 MPH for each 1000 feet above sea level. The mixture should be leaned as shown by the Maximum Performance Take-Off and Climb Settings placard located adjacent to the fuel flow indicator.

If an obstruction dictates the use of a steep climb angle, climb With flaps retracted and maximum continuous power at 85 MPH at sea level to MPH at 10,000 feet.

CRUISE.

Normal cruising is done between 65% and 75% of maximum continuous power. The power settings required to obtain these powers at various altitudes and outside air temperatures can be determined by using your Cessna Power Computer or the OPERATIONAL DATA, Section VI.

The Maximum Cruise Speed Performance table (figure 2-6) shows that cruising can be done most efficiently at higher altitudes because very nearly the same cruising speed can be maintained at much less power.

For greater cruising range at a given throttle setting, select the lowest engine RPM in the green arc range that will give smooth engine operation.

Cowl flaps should be adjusted to maintain the cylinder head temperature at approximately two thirds of the normal operating (green arc) range assure prolonged engine life.

The fuel injection system employed on this engine is considered to be non-icing. In the event that unusual conditions cause the intake air filter become clogged or iced over, an alternate intake air valve opens automatically for the most efficient use of either normal or alternate air, depending on the amount of filter blockage. Due to the lower intake pressure

MAXIMUM CRUISE SPEED PERFORMANCE

% BHP	GAL/HR	ALTITUDE	TRUE AIRSPEED	RANGE (STD TANKS)
75 15.8		6500	163	650
70 14.	6	8000	160 690	
65 13.6		10,000	158	730

Figure 2-6

available through the alternate air valve or a partially blocked filter, full throttle manifold pressure can decrease approximately 1.5 in. Hg.

STALLS.

The stall characteristics are conventional and aural warning is provided by a stall warning horn which sounds between 5 and 10 MPH above the stall in all configurations.

Power-off stall speeds at maximum gross weight and aft c. g. position are presented on page 6-2 as calibrated airspeeds since indicated airspeeds are unreliable near the stall.

SPINS.

Intentional spins are prohibited in this airplane. Should an inadvertent spin occur, the following recovery technique should be used.

(1) Retard throttle to idle position.
(2) Apply full rudder opposite to the direction of rotation, being careful to keep ailerons in a neutral position.
(3) After one-fourth turn, move the control wheel forward of neutral in a brisk motion.
(4) As rotation stops, neutralize rudder, and make a smooth recovery from the resulting dive.

LANDINGS.

Landings should be made on the main wheels first to reduce the landing speed and subsequent need for braking in the landing roll. The nose wheel is lowered to the runway after the speed has diminished to avoid unnecessary nose gear load. This procedure is especially important in rough field landings.

For short field landings, make a power approach at 75 MPH with full flaps. After all approach obstacles are cleared, progressively reduce power. Maintain 75 MPH approach speed by lowering the nose of the airplane. Touchdown should be made with the throttle closed, and on the main wheels first. Immediately after touchdown, lower the nose gear and apply heavy braking as required. For maximum brake effectiveness after all three wheels are on the ground, retract the flaps, hold full nose up elevator and apply maximum possible brake pressure without sliding the tires.

At light operating weights, during ground roll with full flaps, hold the control wheel full back to ensure maximum weight on the main wheels for braking. Under these conditions, full nose down elevator (control wheel full forward) will raise the main wheels off the ground.

BALKED LANDING (GO-AROUND).

In a balked landing (go-around) climb, the wing flap setting should be reduced to 20' immediately after full power is applied. After all obstacles are cleared and a safe altitude and airspeed are obtained, the wing flaps should be retracted.

COLD WEATHER OPERATION.

The use of an external pre-heater and an external power source is recommended whenever possible to reduce wear and abuse to the engine and the electrical system.

Pre-heat will thaw the oil trapped in the oil cooler, which probably will be congealed prior to starting in extremely cold temperatures. When using an external power source, the position of the master switch is important. Refer to Section VII, paragraph GROUND SERVICE PLUG RECEPTACLE, for operating details.

In very cold weather, no oil temperature indication need be apparent before take-off. After a suitable warm-up period (2 to 5 minutes at 1000 RPM), the engine is ready for take-off if it accelerates smoothly and the oil pressure is normal and steady.

During let-down, observe engine temperatures closely and carry sufficient power to maintain them in the recommended operating range.

FLIGHT WITH CARGO DOORS REMOVED.

When operating with the cargo doors removed, an optional spoiler kit must be installed to minimize strong air flow buffeting within the cabin. In addition, all loose equipment, including head rests, rear window sun shade, removable arm rests, safety belts, etc., should be removed or secured. Fifth and sixth seat passengers will receive a strong air blast, and face protection in the form of goggles, hard hat, or helmet is recommended.

The electric wing flap circuit is interrupted by a push-button switch (mounted on the upper sill of the cargo door opening) when the front cargo door is open or removed. Therefore, to have the use of wing flaps when the cargo doors are removed, it is necessary to install a switch depressor plate over the door switch button. Two screws secure the plate in position, depressing the switch button. Without this plate, the wing flaps could not be used unless a rear passenger was available to manually depress the door switch button during flap operation.

With the cargo doors removed, flight characteristics are essentially unchanged, except that a slightly different directional trim setting may be needed.

Section III

EMERGENCY PROCEDURES

Emergencies caused by aircraft or engine malfunctions are extremely rare if proper pre-flight inspections and maintenance are practiced. Enroute weather emergencies can be minimized or eliminated by careful flight planning and good judgment when unexpected weather is encountered. However, should an emergency arise, the basic guidelines described in this section should be considered and applied as necessary to correct the problem.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS.

Malfunctions in the electrical power supply system can be detected by periodic monitoring of the ammeter and over-voltage warning light; however, the cause of these malfunctions is usually difficult to determine. A broken alternator drive belt or wiring is most likely the cause of alternator failures, although other factors could cause the problem. A damaged or improperly adjusted voltage regulator can also cause malfunctions. Problems of this nature constitute an electrical emergency and should be dealt with immediately. Electrical power malfunctions usually fall into two categories; excessive rate of charge and insufficient rate of charge. The paragraphs below describe the recommended remedy for each situation.

EXCESSIVE RATE OF CHARGE.

After engine starting and heavy electrical usage at low engine speeds (such as extended taxiing) the battery condition will be low enough to accept above normal charging during the initial part of a flight. However, after thirty minutes of cruising flight, the ammeter should be indicating less than two needle widths of charging current. If the charging rate were to remain above this value on a long flight, the battery would overheat and evaporate the electrolyte at an excessive rate. Electronic components in the electrical system could be adversely affected by higher than normal voltage if a faulty voltage regulator setting is causing the overcharging. To preclude these possibilities, an over-voltage sensor will automatically shut dawn the alternator and the over-voltage warning light will illuminate

if the charge voltage reaches approximately 16 volts. Assuming that the malfunction was only momentary, an attempt should be made to reactivate the alternator system. To do this, turn both sides of the master switch off and then on again. If the problem no longer exists, normal alternator charging will resume and the warning light will go off. If the light comes on again, a malfunction is confirmed. In this event, the flight should be terminated and/or the current drain on the battery minimized because the battery can supply the electrical system for only a limited period of time. If the emergency occurs at night, power must be conserved for later use of the landing light and flaps during landing.

INSUFFICIENT RATE OF CHARGE.

If the ammeter indicates a continuous discharge rate in flight, the alternator is not supplying power to the system and should be shut down since the alternator field circuit may be placing an unnecessary load on the system. All non-essential equipment should be turned off and the flight terminated as soon as practical.

ELECTRIC TRIM MALFUNCTIONS.

In the event of an electric trim "runaway" malfunction, immediate corrective measures are required as follows:

(1) Minimize the pitch attitude change of the aircraft by applying opposing pressure on the control wheel as required.
(2) Assuming that the trim switch is sticking, snap the trim switch sharply in the opposite direction.
(3) If necessary, grasp the manual elevator trim control wheel to stop its rotation.
(4) Pull the electric elevator trim circuit breaker switch out.
(5) Manually retrim the aircraft as desired with the elevator trim control wheel.
(6) Leave the trim circuit breaker de-activated for the remainder of the flight.

ROUGH ENGINE OPERATION OR LOSS OF POWER.

SPARK PLUG FOULING.

A slight engine roughness in flight may be caused by one or more spark plugs becoming fouled by carbon or lead deposits. This may be verified by

turning the ignition switch momentarily from "BOTH" to either "LEFT" or "RIGHT" position. An obvious power loss in single ignition operation is evidence of spark plug or magneto trouble. Assuming that spark plugs are the more likely cause, lean the mixture to the normal lean setting for cruising flight. If the problem does not clear up in several minutes, determine if a richer mixture setting will produce smoother operation. If not, proceed to the nearest airport for repairs using the "BOTH" position of the ignition switch unless extreme roughness dictates the use of a single ignition position.

MAGNETO MALFUNCTION.

A sudden engine roughness or misfiring is usually evidence of magneto problems. Switching from "BOTH" to either "LEFT" or "RIGHT" ignition switch position will identify which magneto is malfunctioning. Select different power settings and enrichen the mixture to determine if continued operation on "BOTH" magnetos is practicable. If not, switch to the good magneto and proceed to the nearest airport for repairs.

ENGINE-DRIVEN FUEL PUMP FAILURE.

Failure of the engine-driven fuel pump will be evidenced by a sudden reduction in the fuel flow indication prior to a loss of power, while operating from a tank containing adequate fuel.

In the event of an engine-driven fuel pump failure during take-off, immediately hold the left half of the auxiliary fuel pump switch in the "MAX HI" position until the aircraft is well clear of obstacles. Upon reaching a safe altitude, release the "MAX HI" switch. The "HI" position will then provide sufficient fuel flow to maintain engine operation while maneuvering for a landing

.

If an engine-driven fuel pump failure occurs during cruising flight, apply full rich mixture and hold the left half of the auxiliary fuel pump switch in the "MAX HI" position. Dependent upon weight and altitude, the normal "HI" position of the right half of the fuel pump switch may provide sufficient fuel flow and power to sustain level flight. If necessary, additional fuel flow is obtainable by holding the left half of the pump switch in the "MAX HI" position.

LOW OIL PRESSURE.

If low oil pressure is accompanied by normal oil temperature, there

is a possibility the oil pressure gage or relief valve is malfunctioning. A leak in the line to the gage is not necessarily cause for an immediate precautionary landing because an orifice in this line will prevent a sudden loss of oil from the engine sump. However, a landing at the nearest airport would be advisable to inspect the source of trouble.

If a total loss of oil pressure is accompanied by a rise in oil temperature, there is good reason to suspect an engine failure is imminent. Reduce engine power immediately and select a suitable forced landing field. Leave the engine running at low power during the approach, using only the minimum power required to reach the desired touchdown spot.

FORCED LANDING.

PRECAUTIONARY LANDING WITH ENGINE POWER.

Before attempting an "off airport" landing, one should drag the landing area at low altitude to inspect the terrain for obstructions and surface conditions, proceeding as follows:

(1) Drag over selected field with flaps 20" and 90 MPH airspeed, noting the preferred area for touchdown for the next landing approach. Then retract flaps upon reaching a safe altitude and airspeed.
(2) On downwind leg, turn off all switches except the ignition and master switches.
(3) Approach with flaps 40' at 80 MPH.
(4) Unlatch cabin doors prior to final approach.
(5) Before touchdown, turn ignition and master switches "OFF. "
(6) Land in a slightly tail-low attitude.

EMERGENCY LANDING WITHOUT ENGINE POWER.

If an engine stoppage occurs, establish a flaps up glide at 85 MPH. If time permits, attempt to restart the engine by checking for fuel quantity, proper fuel selector valve position, and mixture control setting. Also check that engine primer is full in and locked and ignition switch is properly positioned.

If all attempts to restart the engine fail and a forced landing is imminent, select a suitable field and prepare for the landing as follows:

(1) Pull mixture control to idle cut-off position.
(2) Turn fuel selector valve "OFF".

(3) Turn off all switches except master switch.
(4) Approach at 90 MPH.
(5) Extend wing flaps as necessary within gliding distance of field.
(6) Turn off master switch.
(7) Unlatch cabin doors prior to final approach.
(8) Land in a slightly tail-low attitude.
(9) Apply heavy braking.

DITCHING.

Prepare for ditching by securing or jettisoning heavy objects located in the baggage area, and collect folded coats or cushions for protection of occupant's face at touchdown. Transmit Mayday message on 121.5 MHz. giving location and intentions.

(1) Plan approach into wind if winds are high and seas are heavy. With heavy swells and light wind, land parallel to swells.
(2) Approach with flaps 40' and sufficient power for a 300 ft. /min. rate of descent at 75 MPH.
(3) Unlatch the cabin door.
(4) Maintain a continuous descent until touchdown in level attitude. Avoid a landing flare because of difficulty in judging airplane height over a water surface.
(5) Place folded coat or cushion in front of face at time of touchdown.
(6) Evacuate airplane through cabin doors. If necessary, open window to flood cabin compartment for equalizing pressure so that door can be opened.
(7) Inflate life vests and raft (if available) after evacuation of cabin. The aircraft cannot be depended on for flotation for more than a few minutes.

DISORIENTATION IN CLOUDS.

When flying in marginal weather, the pilot should make sure at the Wing Leveler (if installed) control knob is "ON". However, if the airplane is not equipped with this device or gyro horizon and directional gyro instruments, the pilot will have to rely on the turn coordinator (or turn and bank indicator) if he inadvertently flies into clouds. The following instructions assume that only one of the latter two instruments is available.

EXECUTING A 180' TURN IN CLOUDS.

Upon entering the clouds, an immediate plan should be made to turn back as follows:

(1) Note the time of the minute hand and observe the position of the sweep second hand on the clock.
(2) When the sweep second hand indicates the nearest half-minute, initiate a standard rate left turn, holding the turn coordinator symbolic airplane wing opposite the lower left index mark for 60 seconds. Then roll back to level flight by leveling the miniature airplane.
(3) Check accuracy of the turn by observing the compass heading which should be the reciprocal of the original heading.
(4) If necessary, adjust heading primarily with skidding motions rather than rolling motions so that compass will read more accurately.
(5) Maintain altitude and airspeed by cautious application of elevator control. Avoid over controlling by keeping the hands off the control wheel and steering only with rudder.

EMERGENCY LET-DOWNS THROUGH CLOUDS.

If possible, obtain radio clearance for an emergency descent through clouds. To guard against a spiral dive, choose an easterly or westerly heading to minimize compass card swings due to changing bank angles. In addition, keep hands off the control wheel and steer a straight course with rudder control by monitoring the turn coordinator. Occasionally check the compass heading and make minor corrections to hold an approximate course. Before descending into the clouds, set up a stabilized letdown condition as follows:

(1) Reduce power to set up a 500 to 800 ft. /min. rate of descent.
(2) Adjust mixture for smooth operation.
(3) Adjust the elevator trim tab for a stabilized descent at 110 MPH.
(4) Keep hands off the control wheel.
(5) Monitor turn coordinator and make corrections by rudder alone.
(6) Check trend of compass card movement and make cautious corrections with rudder to stop the turn.
(7) Upon breaking out of clouds resume normal cruising flight.

RECOVERY FROM A SPIRAL DIVE.

If a spiral is encountered, proceed as follows:

(1) Close the throttle.

(2) Stop the turn by using coordinated aileron and rudder control to align the symbolic airplane in the turn coordinator with the horizon reference line.
(3) Cautiously apply elevator back pressure to slowly reduce the indicated airspeed to 110 MPH.
(4) Adjust the elevator trim control to maintain a 11-0 MPH glide.
(5) Keep hands off the control wheel, using rudder control to hold a straight heading.
(6) Check engine operation occasionally, but avoid using enough power to disturb the trimmed glide.
(7) Upon breaking out of clouds, apply normal cruising power and resume flight.

FIRES.

ENGINE FIRE IN FLIGHT.

Although engine fires are extremely rare in flight, the following steps should be taken if one is encountered:

(1) Turn fuel selector valve "OFF".
(2) Pull mixture control to idle cut-off.
(3) Turn off master switch.
(4) Establish a 120 MPH glide.
(5) Close cabin heat and cabin air controls.
(6) Select a field suitable for a forced landing.
(7) If fire is not extinguished, increase glide speed in an attempt to find an airspeed that will provide an incombustible mixture.
(8) Execute a forced landing as described in paragraph Emergency Landing Without Engine Power. Do not attempt to restart the engine.

ELECTRICAL FIRE IN FLIGHT.

The initial indication of an electrical fire is the odor of burning insulation. The immediate response should be to turn the master switch off. Then close off ventilating air as much as practicable to reduce the chances of a sustained fire. If an oxygen system is available in the aircraft and dense smoke makes breathing difficult, occupants should use oxygen masks until the smoke clears.

If electrical power is indispensable for the flight, an attempt may be made to identify and cut off the defective circuit as follows:

(1) Master Switch -- Off.
(2) All other switches (except ignition switch) -- Off.
(3) Check condition of circuit breakers to identify faulty circuit if possible. Leave faulty circuit deactivated.
(4) Master Switch -- "ON. "
(5) Select switches "ON" successively, permitting a short time delay to elapse after each switch is turned on until the short circuit is localized.
(6) Make sure fire is completely extinguished before opening vents.

FLIGHT IN ICING CONDITIONS.

Although flying in known icing conditions is prohibited, an unexpected icing encounter should be handled as follows:

(1) Check pitot heat switch "ON" (if installed).
(2) Turn back or change altitude to obtain an outside air temperature that is less conducive to icing.
(3) Pull cabin heat control full out to obtain windshield defroster airflow. Adjust cabin air control to get maximum defroster heat and airflow.
(4) Increase engine speed to minimize ice build-up on the propeller blades.
(5) Watch for signs of induction air filter ice and regain manifold pressure by increasing the throttle setting.

NOTE

If ice accumulates on the intake filters (causing the alternate air valve to open) a decrease of 1 to 2 inches of full throttle manifold pressure will be experienced.

(6) Plan a landing at the nearest airport. With an extremely rapid ice build-up, select a suitable "off airport" landing site.
(7) With an ice accumulation of one-quarter inch or more on the wing leading edges, be prepared for significantly higher stall speed.
(8) Leave wing flaps retracted. With a severe ice build-up on the horizontal tail, the change in wing wake airflow direction caused by wing flap extension could result in a loss of elevator effectiveness.
(9) Open left window and scrape ice from a portion of the windshield for visibility in the landing approach. The metal control lock shield may be used as a scraper.

(10) Approach at 90 to 100 MPH, depending upon the amount of ice accumulation.

(11) Perform a landing in level attitude.

CARGO DOOR EMERGENCY EXIT.

If it is necessary to use the cargo doors as an emergency exit and the wing flaps are not extended, open the forward door and exit. If the wing flaps are extended, open the doors in accordance with the instructions shown on the placard which is mounted on the forward cargo door.

Section IV

OPERATING LIMITATIONS

OPERATIONS AUTHORIZED.

Your Cessna exceeds the requirements of airworthiness as set forth by the United States Government, and is certificated under FAA Type Certificate No. A4CE as Cessna Model No. U206F.

With standard equipment, the airplane is approved for day and night operation under VFR. Additional optional equipment is available to increase its utility and to make it authorized for use under IFR day and night. An owner of a properly equipped Cessna is eligible to obtain approval for its operation on single-engine scheduled airline service. Your Cessna Dealer will be happy to assist you in selecting equipment best suited to your needs,

MANEUVERS - NORMAL CATEGORY.

The airplane is certificated in the normal category. The normal category is applicable to airplanes intended for non-aerobatic operations. These include any maneuvers incidental to normal flying, stalls (except whip stalls) and turns in which the angle of bank is not more than 60'. In connection with the foregoing, the following gross weight and flight load factors apply:

Gross Weight. . . . . 3600 lbs
Flight load factor * Flaps Up. . . . . +3.8 -5.2
Flight load factor * Flaps Down . . . . . +2.0

***The design load factors are 150% of the above, and in all cases, the structure meets or exceeds design loads.**

Your airplane must be operated in accordance with all FAA-approved markings, placards and check lists in the airplane. If there is any information in this section which contradicts the FAA-approved markings, placards and check lists, it is to be disregarded.

AIRSPEED LIMITATIONS (CAS).

The following is a list of the certificated calibrated airspeed (CAS) limitations for the airplane:

Never Exceed Speed (glide or dive, smooth air)	**210 MPH**
Maximum Structural Cruising Speed	**170 MPH**
Maximum Speed, Flaps Extended	
Flaps 10°	**160 MPH**
Flaps 10° -40°.	**120 MPH**
***Maneuvering Speed . . . . . .**	**139 MPH**

***The maximum speed at which you may use abrupt control travel.**

AIRSPEED INDICATOR MARKINGS.

The following is a list of the certificated calibrated airspeed markings (CAS) for the airplane:

Never Exceed (glide or dive, smooth air	**210 MPH (red line)**
Caution Range	**170-210 MPH (yellow arc)**
Normal Operating Range	**77 -170 MPH (green arc)**
Flap Operating Range	**66- 120 MPH (white arc)**

ENGINE OPERATION LIMITATIONS.

Power and Speed	**300 BHP at 2850 RPM (5-Minute Take -Off)**
	285 BHP at 2700 RPM (Maximum Continuous)

ENGINE INSTRUMENT MARKINGS.

OIL TEMPERATURE GAGE.

Normal Operating Range	**Green Arc**
Do Not Exceed	**240' F (red line)**

OIL PRESSURE GAGE.

Idling Pressure . . . . . 10 psi (red line)
Normal Operating Range . . . . . 30-60 psi (green arc)
Maximum Pressure. . . . . 100 psi (red line)

FUEl QUANTITY INDICATORS .

Empty (1. 0 gallon unusable each standard tank) . . . . . E (red line)
(2.0 gallons unusable each long range tank)

CYliNDER HEAD TEMPERATURE GAGE.

Normal Operating Range. . . . . 200-460°F (green arc)
Do Not Exceed . . . . . 460 °F (red line)

MANIFOLD PRESSURE GAGE.

Normal Operating Range15-25 in . . . . . Hg (green arc)

TACHOMETER .

Normal Operating Range . . . . . 2200-2550 RPM (green arc)
Caution Range . . . . . 2700-2850 RPM (yellow arc)
Maximum (Engine rated speed) . . . . . 2850 RPM (red line)

FUEl FIOW INDICATOR .

Normal Operating Range. . . . . 7.0-17.0 gal/hI' (green arc)
Minimum and Maximum . . . . . 3.5 and 19.5 psi (25.2 gal/hr)(red lines)

NOTE

A placard, located adjacent to the fuel flow indicator, provides maximum performance take-off/climb fuel flow settings at altitude. These settings, as called out on the placard, are as follows:

FUEL FLOW AT FULL THROTTLE

	2700 RPM	2850 RPM
Sea Level	23 gal/hr	24 gal/hr
4000 Feet	21 gal/hr	22 gal/hr
8000 Feet	19 gal/hr	20 gal/hr

SUCTION GAGE (GYRO SYSTEM).

Normal Operating Range . . . . . 4.6 to 5.4 in. Hg. (green arc)

WEIGHT AND BALANCE.

The following information will enable you to operate your Cessna within the prescribed weight and center of gravity limitations. To figure the weight and balance for your particular airplane, use the Sample Problem, Loading Graph, and Center of Gravity Moment Envelope as follows:

Take the "Licensed Empty Weight" and "Moment" from the Weight and Balance and Installed Equipment Data sheet (or changes noted on FAA Form 337) carried in your airplane, and write them down in the column titled "YOUR AIRPLANE" on the Sample Loading Problem.

NOTE

The Weight and Balance and Installed Equipment Data sheet is included in the aircraft file. In addition to the licensed empty weight and moment noted on this sheet, the c. g. arm (fuselage station) is shown. The c. g. arm figure need not be used on the Sample Loading Problem. The moment shown on the sheet must be divided by 1000 and this value used as the moment/ 1000 on the loading problem.

Use the Loading Graph to determine the moment/1000 for each additional item to be carried, then list these on the loading problem.

NOTE

Loading Graph information is based on seats positioned for average occupants and baggage or cargo loaded in the center of the baggage areas. For other than average loading situations, the Sample Loading Problem lists fuselage stations for these items to indicate their forward and aft c. g. range limitation (seat travel or baggage/ cargo area limitation). Additional moment calculations, based on the actual weight and c. g. arm (fuselage station) of the item being loaded, must be made if the position of the load is different from that shown on the Loading Graph. The arm for any location in the aircraft can be determined from the diagram on page 4-10 (the c. g. arm is the same as the station). Multiply the weight of the object by the arm and divide by 1000 to get the moment/l000.

When an optional cargo pack is installed, it is necessary to determine the c. g. arm and calculate the moment/l000 of items carried in the pack.

The arm for any location in the pack can be determined from the diagram on page 4-12. Multiply the weight of the item by the c. g. arm, then divide by 1000 to get the moment/l000. The maximum loading capacity of the pack is 300 pounds.

NOTE

Each loading should be figured in accordance with the above paragraphs. When the loading is light (such as pilot and copilot, and no rear seats or cargo), be sure to check the forward balance limits. When loading is heavy (near gross weight), be sure to check the aft balance limits.

To avoid time consuming delays in cargo and/or passenger shifting, plan your load so that the heaviest cargo and/or passengers are in the forward part of the aircraft or cargo pack, and the lightest in the rear. Always plan to have any vacant space at the rear of the aircraft or pack. For example, do not have passengers occupy the aft seat unless the front and center seats are to be occupied.

Total the weights and moments/l000 and plot these values on the Center of Gravity Moment Envelope to determine whether the point falls within the envelope, and if the loading is acceptable.

SAMPLE LOADING PROBLEM	SAMPLE AIRPLANE Weight (lbs,)	SAMPLE AIRPLANE Moment (lb. -lnS. / 1000)		YOUR AIRPLANE Weight (lbs,)	YOUR AIRPLANE Moment (lb. -lnS. / 1000)
1. Licensed Empty Weight	1975	69.6		**2126.2	**90.4
2. Oil (No Oil Filter; 12 Qts. = 22 Lbs. @ -0.4 Lb. -Ins. / 1000)	22	-0.4		INC	INC
Oil (With Opt. Oil Filter; 13 Qts. = 24 Lbs. @ -0.5 Lb. -Ins. / 1000)					
3. Fuel (Standard - 63 Gal. @ 6 Lbs. / Gal.)	N/A	N/A		N/A	N/A
Fuel (Long Range - 80 Gal. @ 6 Lbs. / Gal.).	480	23.0		480	23.0
4. Pilot and Copilot (Sta. 34 to 48)	340	12.6			
5. Center Passengers (Sta. 69 to 79)	340	23.8			
Aft Passengers (Sta. 92 to 100) . . 340 34.0	340	34.0			
Baggage IV (Sta. 109 to 145; 120 Lbs. Max.)	103	13.1			
6. *Cargo "A" (Sta. 10 to 50)					
*Cargo "B" (Sta. 50 to 84)					
*Cargo "C" (Sta. 84 to 109)					
*Cargo "D" (Sta. 109 to 145)					
7. Cargo Pack (Sta. 10 to 84; 300 Lbs. Max.)					
8. TOTAL WEIGHT AND MOMENT	3600	175.7			

9. Locate this point (3600 at 175.7) on the Center of Gravity Moment Envelope, and since this point falls within the envelope, the loading is acceptable.

*Maximum allowable cargo loads will be determined by the type and number of tie-downs used, as well as by the airplane weight and C. G. limitations. Floor loading must not exceed 200 lbs. per square foot.

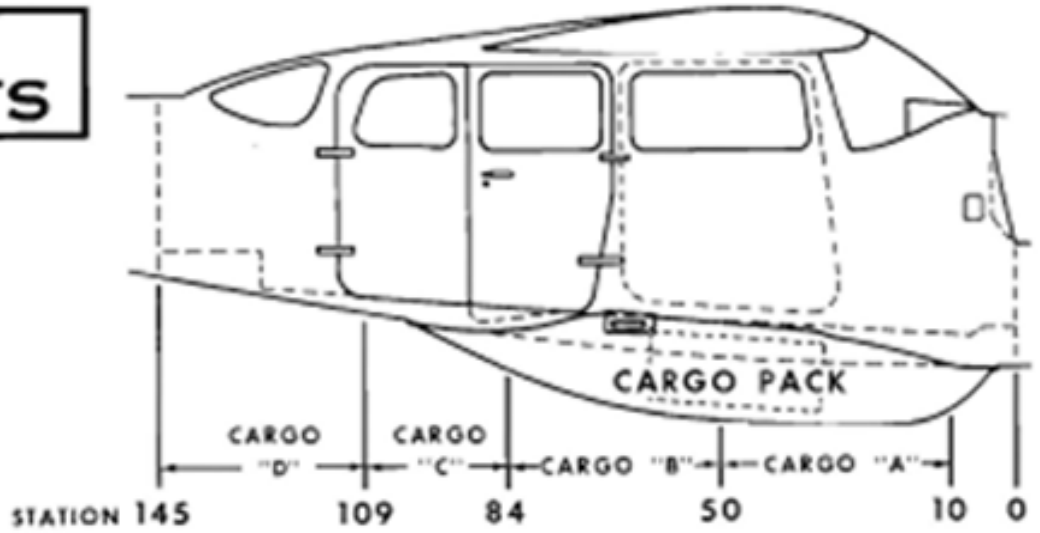
** Includes Oil, Fire Ext, Nav Pubs, Survival Equip., Ladder, Tow bar, Gear box, and cover

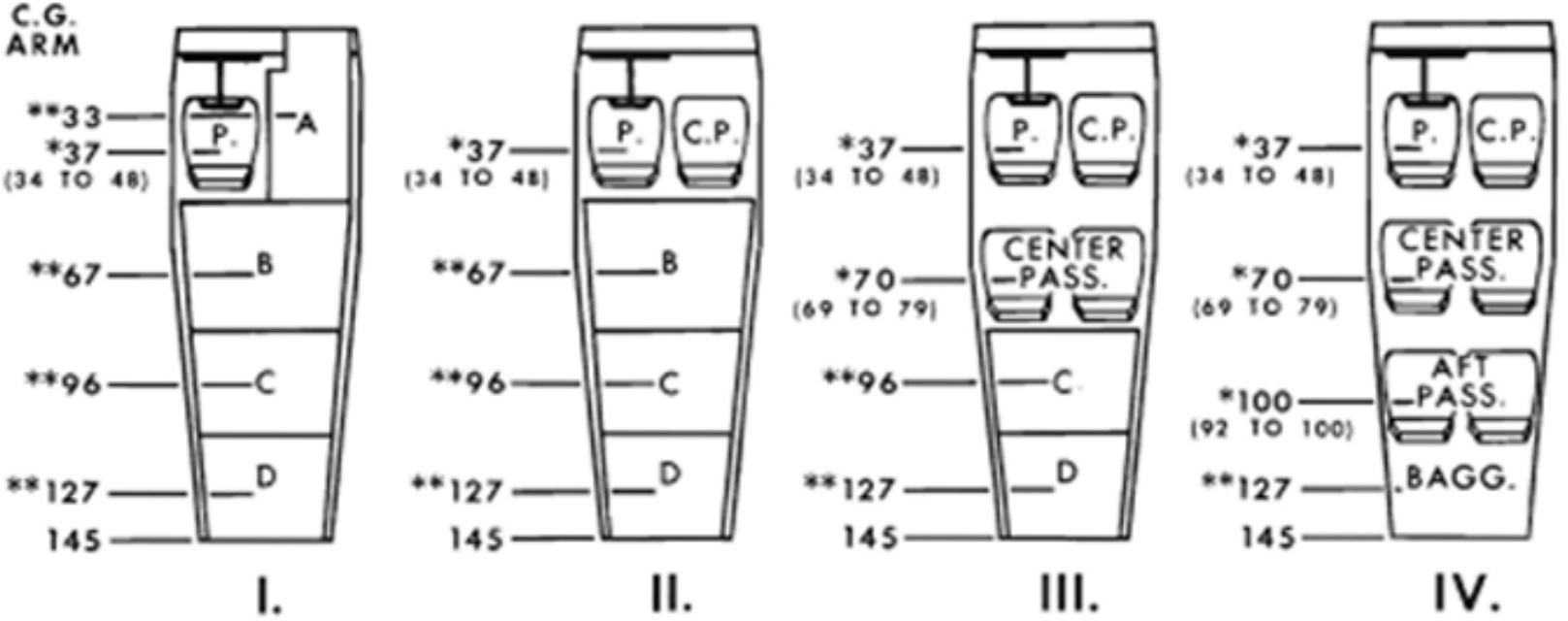
LOADING ARRANGEMENTS

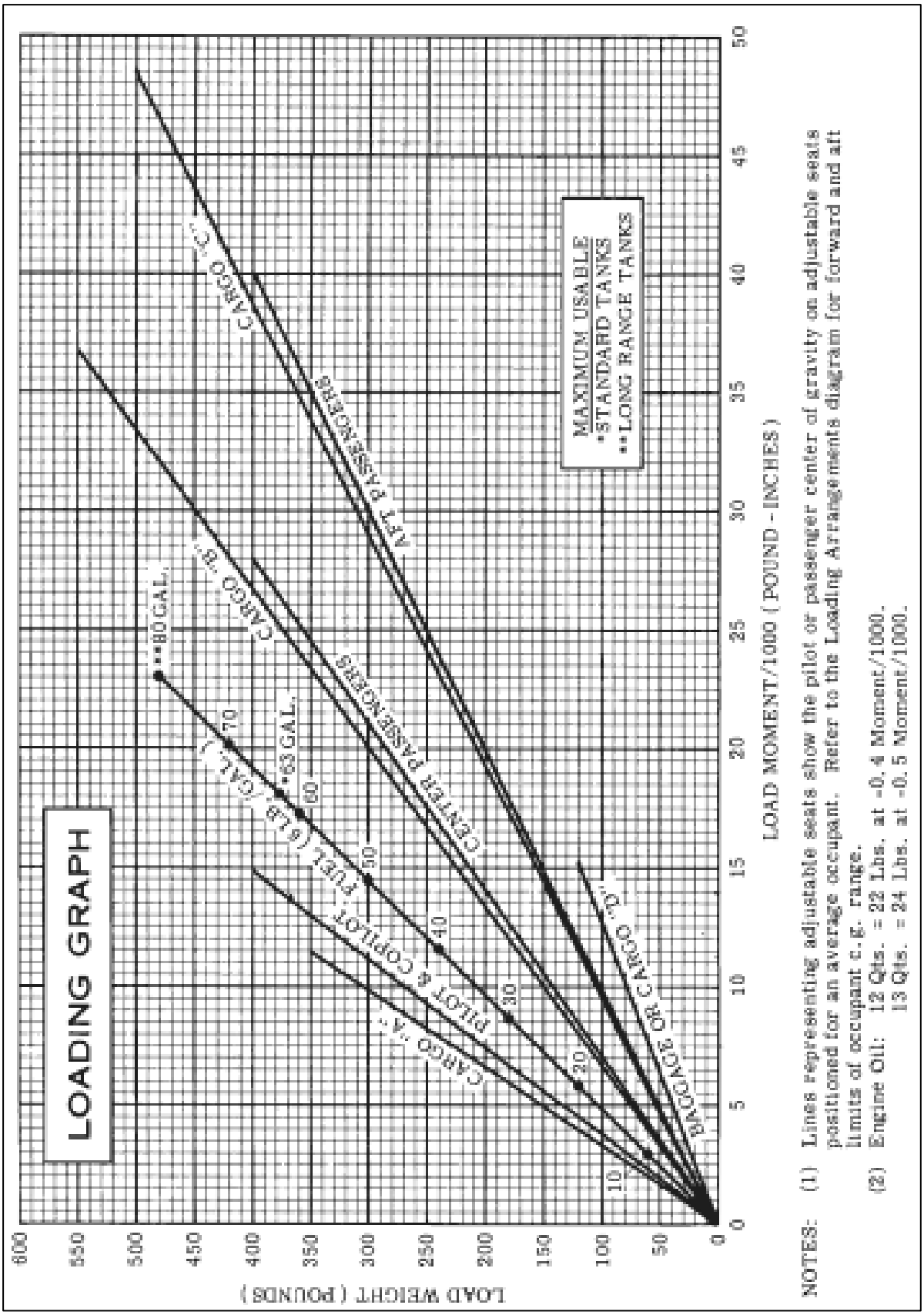
* Pilot or passenger center of gravity on adjustable seats positioned for average occupant. Numbers in parenthesis indicate forward and aft limits of occupant center of gravity range.

** Arms measured to the center of the areas shown.

NOTE: The aft baggage wall (approximate station 145) can be used as a convenient interior reference point for determining the location of baggage area fuselage stations.

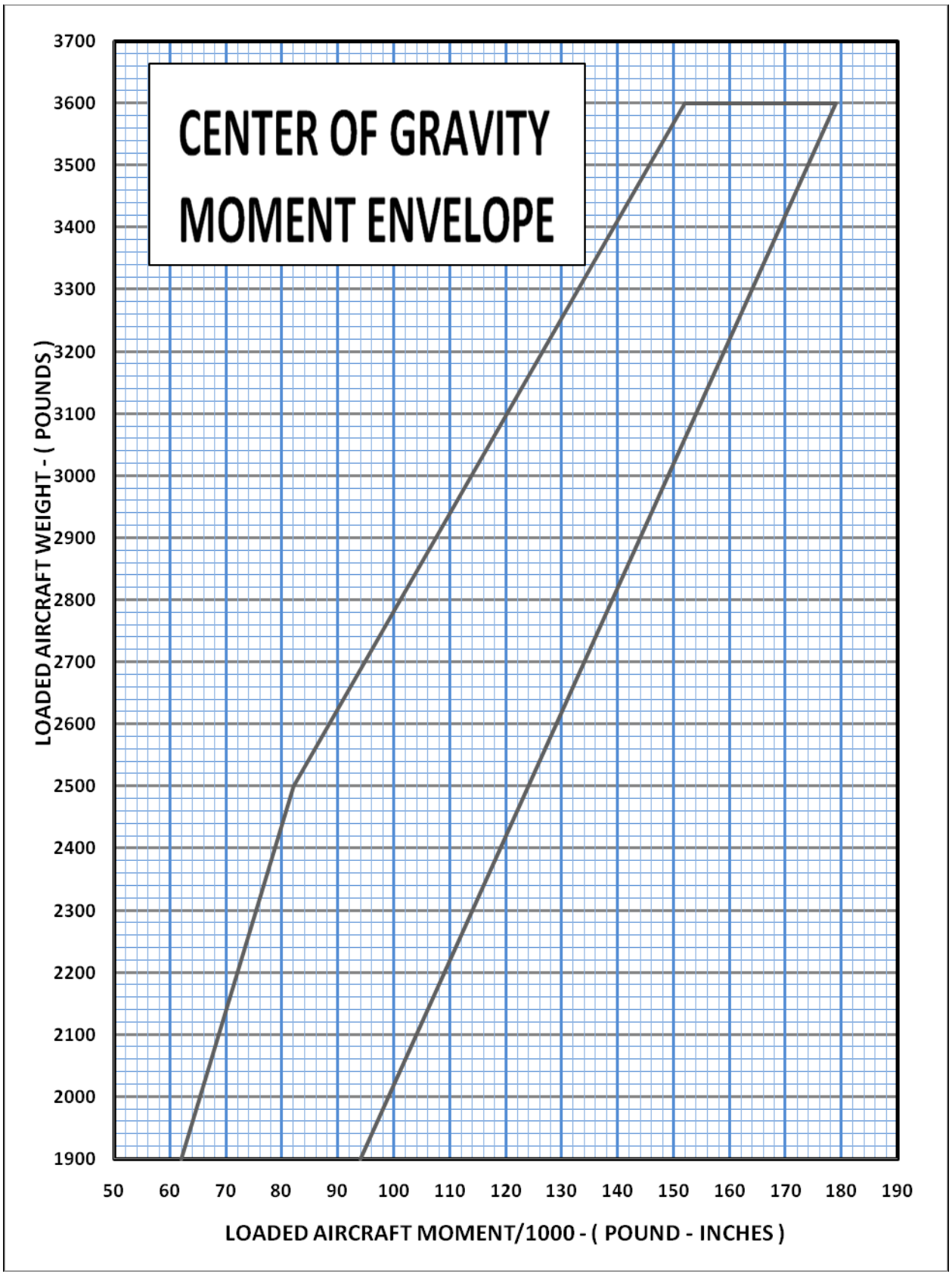




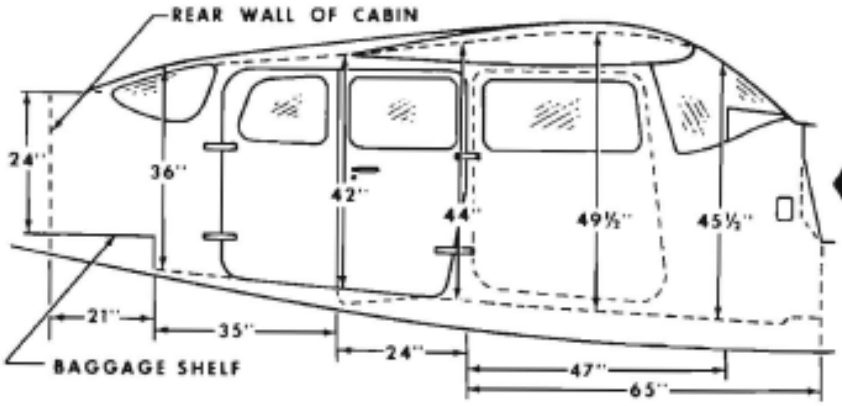


NOTES: (1) Lines representing adjustable seats show the pilot or passenger center of gravity on adjustable seats positioned for an average occupant. Refer to the Loading Arrangements diagram for forward and aft limits of occupant c.g. range.

(2) Engine Oil: 12 Qts. = 22 Lbs. at -0.4 Moment/1000.
13 Qts. = 24 Lbs. at -0.5 Moment/1000.



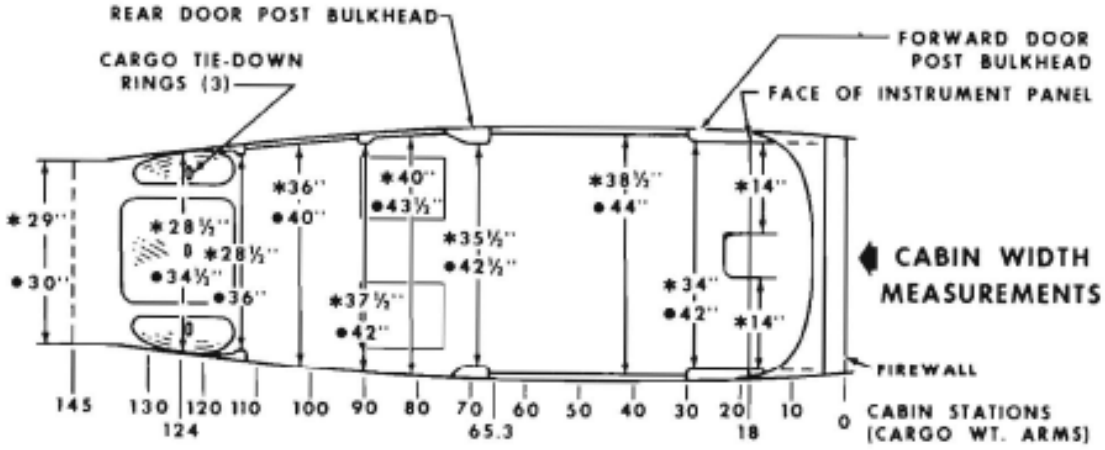
INTERNAL CABIN DIMENSIONS
FOR CARGO LOADING



WIDTH
*CABIN FLOOR
• LWR. WINDOW LINE

DOOR OPENING DIMENSIONS

	WIDTH (TOP)	WIDTH (BOTTOM)	HEIGHT (FRONT)	HEIGHT (REAR)
CABIN DOOR	32½"	37"	41"	39"
CARGO DOORS	43"	40"	39¼"	37½"



NOTES:

1. Use the forward face of the rear door post as a reference point to locate C. G. arms. For example, a box with its center of weight located 13 inches aft of the rear door post would have a C. G. arm of (65. 3+13. 0 = 78. 3) 78. 3 inches.
2. Maximum allowable floor loading: 200 pounds/square foot. However, when items with small or sharp support areas are carried, the installation of a 1/4" spruce or fir plywood floor is highly recommended to protect the aircraft structure.

CARGO LOADING

Since your Cessna is capable of carrying large amounts of cargo, it will be necessary to properly secure this load before flight. An optional tie -down kit is available from any Cessna dealer. Provided in this kit are 16 tie -down blocks that fasten to the seat rails and three "D" rings on the floor at fuselage station 124. If more tie-down points are needed, the seat belt attaching points, as well as shoulder harness attaching points, may be used. Rope, strap, or cable used for tie-down should be rated at a minimum of ten times the load weight capacity of the tie -down fittings used.

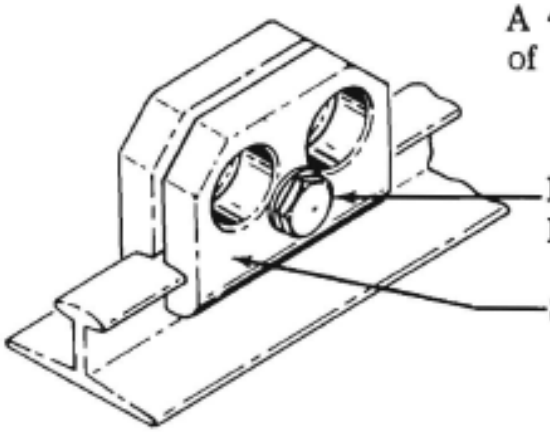
The following table shows the maximum allowable cargo weight for each type of attachment:

ITEM	LOCATION	* MAXIMUM LOAD(LBS.)
Seat Rail Tie -Down Assy	On Seat Rail Sec tion Without	200
Seat Rail Tie-Down Assy	On Seat Rail Section With Lock Pin Holes	100
D Rings	Floor only	60
Seat Belt Attachment	Floor or Side -Wall	200
Shoulder Strap	Cabin Top	175

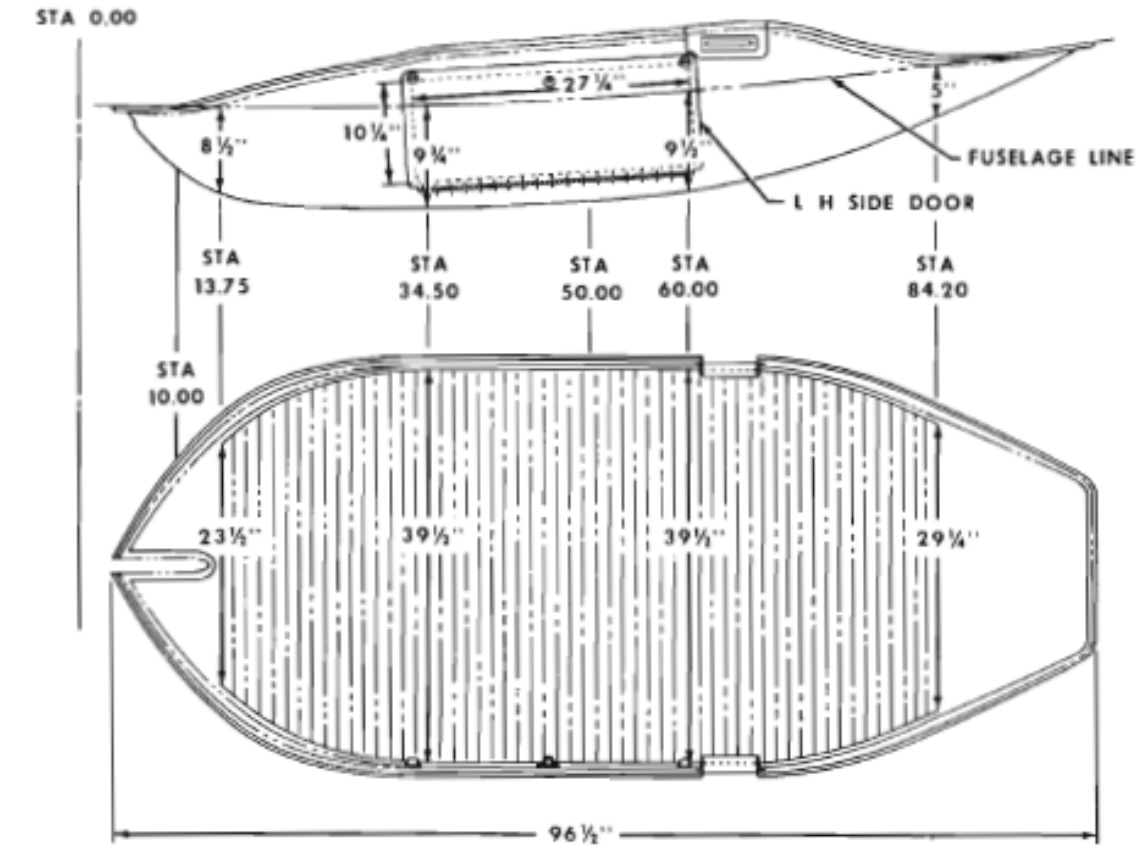
***Rated load per attachment (Cargo Item Wt. -+ No. Tie-Downs). A sufficient number of attachments to restrain the cargo from shifting should be used in addition to load requirements.**

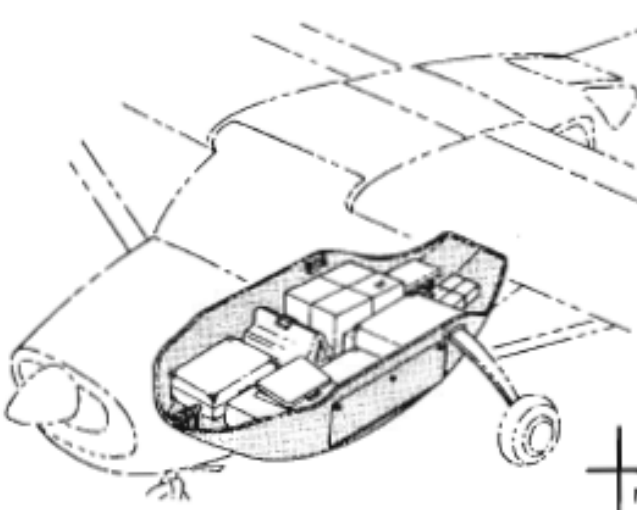
FOR EXAMPLE:

A 400# load would require a minimum of four (4) tie-downs rated at 100# each.



CARGO PACK





THE CARGO PACK WAS DESIGNED TO ACCOMMODATE THREE "TWO-SUITERS", PLUS OTHER SMALL MISCELLANEOUS ARTICLES. MAXIMUM LOADING FOR CARGO PACK IS 300 POUNDS.

NOTE: STATION LOCATION AND C.G. ARM ARE IDENTICAL

Section V

CARE OF THE AIRPLANE

If your airplane is to retain that new-plane performance and dependability, certain inspection and maintenance requirements must be followed. It is wise to follow a planned schedule of lubrication and preventive maintenance based on climatic and flying conditions encountered in your locality.

Keep in touch with your Cessna Dealer, and take advantage of his knowledge and experience. He knows your airplane and how to maintain it. He will remind you when lubrications and oil changes are necessary, and about other seasonal and periodic services.

GROUND HANDLING.

The airplane is most easily and safely maneuvered by hand with the tow-bar attached to the nose wheel. When towing with a vehicle, do not exceed the nose gear turning angle of 35° either side of center or damage to the gear will result. If the airplane is towed or pushed over a rough surface during hangaring, watch that the normal cushioning action of the nose strut does not cause excessive vertical movement of the tail and the resulting contact with low hangar doors or structure. A flat nose tire or deflated strut will also increase tail height.

MOORING YOUR AIRPLANE.

Proper tie-down procedure is your best precaution against damage to your parked airplane by gusty or strong winds. To tie down your airplane securely, proceed as follows:

(1) Set the parking brake and install the control wheel lock.
(2) Install a surface control lock over the fin and rudder.
(3) Tie sufficiently strong ropes or chains (700 pounds tensile strength) to the wing and tail tie-down fittings, and secure each rope or chain to a ramp tie -down.
(4) Tie a sufficiently strong rope to the nose gear torque link, and secure it to a ramp tie -down.
(5) Install a pitot tube cover.

WINDSHIELD-WINDOWS.

The plastic windshield and windows should be cleaned with an aircraft windshield cleaner. Apply the cleaner sparingly with soft cloths, and rub with moderate pressure until all dirt, oil scum and bug stains are removed. Allow the cleaner to dry, then wipe it off with soft flannel cloths.

If a windshield cleaner is not available, the plastic can be cleaned with soft cloths moistened with Stoddard solvent to remove oil and grease.

NOTE

Never use gasoline, benzene, alcohol, acetone, carbon tetrachloride, fire extinguisher or anti-ice fluid, lacquer thinner or glass cleaner to clean the plastic. These materials will attack the plastic and may cause it to craze.

Follow by carefully washing with a mild detergent and plenty of water. Rinse thoroughly, then dry with a clean moist chamois. Do not rub the plastic with a dry cloth since this builds up an electrostatic charge which attracts dust. Waxing with a good commercial wax will finish the cleaning job. A thin, even coat of wax, polished out by hand with clean soft flannel cloths, will fill in minor scratches and help prevent further scratching.

Do not use a canvas cover on the windshield unless freezing rain or sleet is anticipated since the cover may scratch the plastic surface.

ALUMINUM SURFACES.

The clad aluminum surfaces of your Cessna may be washed with clear water to remove dirt; oil and grease may be removed with gasoline, naphtha, carbon tetrachloride or other non-alkaline solvents. Dulled aluminum surfaces may be cleaned effectively with an aircraft aluminum polish.

After cleaning, and periodically thereafter, waxing with a good automotive wax will preserve the bright appearance and retard corrosion. Regular waxing is especially recommended for airplanes operated in salt water areas as a protection against corrosion.

PAINTED SURFACES.

The painted exterior surfaces of your new Cessna have a durable, long lasting finish and, under normal conditions, require no polishing or

buffing. Approximately 15 days are required for the paint to cure completely; in most cases, the curing period will have been completed prior to de livery of the airplane. In the event that polishing or buffing is required within the curing period, it is recommended that the work be done by someone experienced in handling uncured paint. Any Cessna Dealer can accomplish this work.

Generally, the painted surfaces can be kept bright by washing with water and mild soap, followed by a rinse with water and drying with cloths or a chamois. Harsh or abrasive soaps or detergents which cause corrosion or scratches should never be used. Remove stubborn oil and grease with a cloth moistened with Stoddard solvent.

Waxing is unnecessary to keep the painted surfaces bright. However, if desired, the airplane may be waxed with a good automotive wax. A heavier coating of wax on the leading edges of the wings and tail and on the engine nose cap and propeller spinner will help reduce the abrasion encountered in these areas.

When the airplane is parked outside in cold climates and it is necessary to remove ice before flight, care should be taken to protect the painted surfaces during ice removal with chemical liquids. A 50-50 solution of isopropyl alcohol and water will satisfactorily remove ice accumulation without damaging the paint. A solution with more than 50% alcohol is harmful and should be avoided. While applying the de-icing solution, keep it away from the windshield and cabin windows since the alcohol will attack the plastic and may cause it to craze.

PROPELLER CARE.

Preflight inspection of propeller blades for nicks, and wiping them occasionally with an oily cloth to clean off grass and bug stains will assure long, trouble-free service. Small nicks on the propeller, particularly near the tips and on the leading edges, should be dressed out as soon as possible since these nicks produce stress concentrations, and if ignored, may result in cracks. Never use an alkaline cleaner on the blades; remove grease and dirt with carbon tetrachloride or Stoddard solvent

INTERIOR CARE.

To remove dust and loose dirt from the upholstery fabric and carpet, clean the interior regularly with a vacuum cleaner.

Blot up any spilled liquid promptly, with cleansing tissue or rags. Don't pat the spot; press the blotting material firmly and hold it for several seconds. Continue blotting until no more liquid is taken up. Scrape off sticky materials with a dull knife, then spot-clean the area.

Soiled upholstery may be cleaned with foam-type detergent, used according to the manufacturer's instructions. Keep the foam as dry as possible and remove it with a vacuum cleaner.

Oily spots may be cleaned with household spot removers, used sparingly. Before using any solvent, read the instructions on the container and test it on an obscure place on the fabric to be cleaned. Never saturate the fabric with a volatile solvent; it may damage the padding and backing materials.

If your airplane is equipped with leather seating, cleaning of the seats is accomplished using a soft cloth or sponge dipped in mild soap suds. The soap suds, used sparingly will remove traces of dirt and grease. The soap should be removed with a clean damp cloth.

The headliner, instrument panel, plastic trim and control knobs need only be wiped off with a damp cloth. Oil and grease on the control wheel and control knobs can be removed with a cloth moistened with Stoddard solvent. Volatile solvents, such as mentioned in paragraphs on care of the windshield, must never be used since they soften and craze the plastic.

On aircraft equipped with a cargo interior, materials used on the cabin floor and sidewalls are not easily soiled or stained. Dust and loose dirt should be picked up with a vacuum cleaner. Stubborn dirt can be wiped off with a cloth moistened in clean water. Mild soap suds, used sparingly, will remove grease. The soap should be removed with a clean damp cloth.

Radio and autopilot faceplates are finished with a suede coating which produces a soft, rich appearance and warm feel comparable to suede. Unlike suede leather, dust and dirt marks can be removed easily with a damp sponge. Remove non-greasy stains with a liquid cleaner such as "Mr. Clean", "Handy Andy", "Lestoil", "Liquid Ajax", or "Cinch". Greasy stains can be removed with a naphtha-dampened sponge, scrub brush or lint-free cloth.

FLYABLE STORAGE.

Aircraft placed in non-operational storage for a maximum of 30 days or those which receive only intermittent operational use for the first 25 hours are considered in flyable storage status. Every seventh day during these periods, the propeller should be rotated by hand through five revolutions. This action "limbers" the oil and prevents any accumulation of corrosion on engine cylinder walls.

IMPORTANT

For maximum safety, check that the ignition switch is "OFF, " the throttle is closed and the mixture control is in the idle cut-off position before rotating the propeller by hand. Do not stand within the arc of the propeller blades while turning the propeller.

After 30 days, the aircraft should be flown for 30 minutes or a ground runup should be made just long enough to produce an oil temperature within the lower green arc range. Excessive ground runup should be avoided.

Engine runup also helps to eliminate excessive accumulations of water in the fuel system and other air spaces in the engine. Keep fuel tanks full to minimize condensation in the tanks. Keep the battery fully charged to prevent the electrolyte from freezing in cold weather. If the aircraft is to be stored temporarily, or indefinitely, refer to the Service Manual for proper storage procedures.

INSPECTION SERVICE AND INSPECTION PERIODS.

With your airplane you will receive an Owner's Service Policy. Coupons attached to the policy entitle you to an initial inspection and the first 100-hour inspection at no charge. If you take delivery from your Dealer, he will perform the initial inspection before delivery of the airplane to you. If you pick up the airplane at the factory, plan to take it to your Dealer reasonably soon after you take delivery on it. This will permit him to check it over and to make any minor adjustments that may appear necessary. Also, plan an inspection by your Dealer at 100 hours or 180 days, whichever comes first. This inspection also is performed by your Dealer for you at no charge. While these important inspections will be performed for you by any Cessna Dealer, in most cases you will prefer to have the Dealer from whom you purchased the airplane accomplish this work.

Federal Aviation Regulations require that all airplanes have a periodic (annual) inspection as prescribed by the administrator, and performed by a person designated by the administrator. In addition, 100-hour periodic inspections made by an "appropriately-rated mechanic" are required if the airplane is flown for hire. The Cessna Aircraft Company recommends the 100-hour periodic inspection for your airplane. The procedure for this 100-hour inspection has been carefully worked out by the factory and is followed by the Cessna Dealer Organization. The complete familiarity of the Cessna Dealer Organization with Cessna equipment and with factory-approved procedures provides the highest type of service possible at lower cost.

AIRCRAFT FILE.

There are miscellaneous data, information and licenses that are a part of the aircraft file. The following is a check list for that file. In addition, a periodic check should be made of the latest Federal Aviation Regulations to ensure that all data requirements are met.

A. To be displayed in the aircraft at all times:
   (1) Aircraft Airworthiness Certificate (FAA Form 8100-2).
   (2) Aircraft Registration Certificate (FAA Form 8050-3).
   (3) Aircraft Radio Station License, if transmitter installed (FCC Form 556).

B. To be carried in the aircraft at all times:
   (1) Weight and Balance, and associated papers (latest copy of the Repair and Alteration Form, FAA Form 337, if applicable).
   (2) Aircraft Equipment List.

C. To be made available upon request:
   (1) Aircraft Log Book.
   (2) Engine Log Book.

NOTE

Cessna recommends that these items, plus the Owner's Manual, "Cessna Flight Guide" (Flight Computer), Pilot's Check List, and Service Policies be carried in the aircraft at all times.

Most of the items listed are required by the United States Federal Aviation Regulations. Since the regulations of other nations may require

other documents and data, owners of exported aircraft should check with their own aviation officials to determine their individual requirements.

MAA PLATE/FINISH AND TRIM PLATE.

Information concerning the Type Certificate Number (TC), Production Certificate Number (PC), Model Number and Serial Number of your particular aircraft can be found on the MAA (Manufacturers Aircraft Association) plate located on the left forward doorpost.

A Finish and Trim Plate contains a code describing the interior color scheme and exterior paint combination of the aircraft. The code may be used in conjunction with an applicable Parts Catalog if finish and trim information is needed. This plate is located at the bottom of the left forward doorpost.

LUBRICATION AND SERVICING PROCEDURES

Specific servicing information is provided here for items requiring daily attention. A Servicing Intervals Check List is included to inform the pilot when to have other items checked and serviced.

DAILY

FUEL TANK FILLERS:

Service after each flight with 100/130 minimum grade fuel. (100/ 130 low lead aviation fuel with a lead content limited to 2 c. c. per gallon is also approved.) The capacity of each tank is 32.5 gallons. When optional long range fuel tanks are installed, the capacity of each tank is 42.0 gallons.

FUEL STRAINER:

Before the first flight of the day and after each refueling, pull out fuel strainer drain knob for about four seconds to clear fuel strainer of possible water and sediment. Release drain knob, then check that strainer drain is closed after draining. If water is observed, there is a possibility that the fuel tank sumps contain water. Thus, the fuel tank sump drain plugs and fuel reservoir drain plugs should be removed, (or optional drain valves drained) to check for the presence of water.

OXYGEN CYLINDER AND FILLER VALVE (OPT):

Check oxygen pressure gage for anticipated requirements before each flight. Use filler valve on left side of fuselage tail cone (under cover plate) to refill cylinder with aviator's breathing oxygen (Spec. No. MIL-O- 27210). Maximum pressure (cylinder temperature stabilized after filling), 1800 psi at 70°F. Refer to page 7-12 for filling pressures.

OIL DIPSTICK:

Check oil level before each flight. Do not operate on less than 9 quarts. To minimize loss of oil through breather, fill to 10 quart level for normal flights of less than 3 hours. For extended flight, fill to 12 quarts. If optional oil filter is installed, one additional quart is required when the filter element is changed.

OIL FILLER:

When preflight check shows low oil level, service with aviation grade engine oil; SAE 50 above 40°F and SAE 10W30 or SAE 30 below 40°F. (Multi-viscosity oil with a range of SAE 10W30 is recommended for improved starting in cold weather.) Detergent or dispersant oil, conforming to Continental Motors Specification MHS-24A, must be used. Your Cessna Dealer can supply approved brands of oil.

NOTE

Your Cessna was delivered from the factory with a corrosion preventive aircraft engine oil. If oil must be added during the first 25 hours, use only aviation grade straight mineral oil (non-detergent) conforming to Specification No. MIL-L-6082.

SERVICING INTERVALS CHECK LIST

FIRST 25 HOURS

ENGINE OIL SUMP AND OIL FILTER -- After first 25 hours of operation, drain engine oil sump and clean both the oil suction strainer and oil pressure screen. If an optional oil filter is installed, change filter element at this time. Refill sump with straight mineral oil (non-detergent) and use until a total of 50 hours have accumulated or oil consumption has stabilized, then change to detergent oil.

EACH 50 HOURS

BATTERY -- Check and service. Check more often (at least every 30 days) if operating in hot weather.

ENGINE OIL SUMP AND OIL FILTER -- Change engine oil and replace filter element. If optional oil filter is not installed, change oil and clean both the oil suction strainer and oil pressure screen every 25 hours. Change engine oil at least every four months even though less than the recommended hours have accumulated. Reduce periods for prolonged operation in dusty areas, cold climates, or when short flights and long idle periods result in sludging conditions.

INDUCTION AIR FILTER -- Clean or replace. Under extremely dusty conditions , daily maintenance of the filter is recommended.

NOSE GEAR TORQUE LINKS -- Lubricate. When operating under dusty conditions, more frequent lubrication is recommended.

SHIMMY DAMPENER -- Refer to Service Manual for detailed instructions on checking and filling.

EACH 100 HOURS

SPARK PLUGS - - Clean, test and regap. '

FUEL STRAINER - - Disassemble and clean.

FUEL TANK SUMP DRAIN PLUGS -- Drain.

FUEL RESERVOIR DRAIN VALVES (OPT) -- Drain.

SERVICING INTERVALS CHECK LIST

EACH 100 HOURS (Continued)

FUEL/ AIR CONTROL UNIT SCREEN -- Clean.

BRAKE MASTER CYLINDERS -- Check and fill.

VACUUM SYSTEM OIL SEPARATOR (OPT) -- Clean.

SUCTION RELIEF VALVE INLET SCREEN (OPT) -- Clean.

EACH 500 HOURS

WHEEL BEARINGS -- Lubricate at first 100 hours and at 500 hours thereafter. Reduce lubrication interval to 100 hours when operating in dusty or seacoast areas, during periods of extensive taxiing, or when numerous take-offs and landings are made.

VACUUM SYSTEM AIR FILTER (OPT) -- Replace filter element. Replace sooner if suction gage reading drops to 4.6 in. Hg.

AS REQUIRED

NOSE GEAR SHOCK STRUT -- Keep filled with hydraulic fluid and inflated with air to 80 psi.

ADDITIONAL SERVICE AND TEST REGULATIONS

Servicing Intervals of items in the preceding check list are recommended by The Cessna Aircraft Company. Government regulations may require that additional items be inspected, serviced or tested at specific intervals for various types of flight operations. For these regulations, owners should check with aviation officials in the country where the aircraft is being operated.

OWNER FOLLOW-UP SYSTEM

Your Cessna Dealer has an owner follow-up system to notify you when he receives information that applies to your Cessna. In addition, if you wish, you may choose to receive similar notification directly from the Cessna Customer Services Department. A subscription form is supplied in your Owner's Service Policy booklet for your use, should you choose to request this service. Your Cessna Dealer will be glad to supply you with details concerning these follow-up programs, and stands ready through his Service Department to supply you with fast, efficient, low cost service.

PUBLICATIONS

Various publications and flight operation aids are furnished in the aircraft when delivered from the factory. These items are listed below.

- OWNER'S MANUALS FOR YOUR
  - AIRCRAFT
  - ELECTRONICS AND AUTOPILOT
- CESSNA FLIGHT GUIDE (FLIGHT COMPUTER)
- SALES AND SERVICE DEALER DIRECTORY
- DO'S AND DON'TS ENGINE BOOKLET

The following additional publications, plus many other supplies that are applicable to your aircraft, are available from your Cessna Dealer.

- SERVICE MANUALS AND PARTS CATALOGS FOR YOUR
  - AIRCRAFT
  - ENGINE AND ACCESSORIES
  - ELECTRONICS AND AUTOPILOT

Your Cessna Dealer has a current catalog of all available Customer Services Supplies, many of which he keeps on hand. If supplies are not in stock, your Cessna Dealer will be happy to order for you.

Section VI

OPERATIONAL DATA

The operational data charts on the following pages are presented for two purposes: first, so that you may know what to expect from your airplane under various conditions; and second, to enable you to plan your flights in detail and with reasonable accuracy.

The data in the charts has been compiled from actual flight tests with the airplane and engine in good condition and using average piloting techniques. Note also that the range charts make no allowances for wind, navigational errors, warm-up, take-off, climb, etc. You must estimate these variables for yourself and make allowances accordingly.

Remember that the charts contained herein are based on standard day conditions. For more precise power, fuel consumption, and endurance information, consult the Cessna Flight Guide (Power Computer) supplied with your aircraft. With the Flight Guide, you can easily take into account temperature variations from standard at any flight altitude.

Speed performance data is shown for a standard deluxe version airplane equipped with speed fairings, which increase the speed by one MPH.

AIRSPEED CORRECTION TABLE I

FLAPS 0°								
IAS - MPH	**60**	**80**	**100**	**120**	**140**	**160**	**180**	**200**
CAS - MPH	**67**	**82**	**100**	**119**	**137**	**156**	**176**	**195**
***FLAPS 20°**								
IAS - MPH	**50**	**60**	**70**	**80**	**90**	**100**	**110**	**120**
CAS - MPH	**63**	**69**	**75**	**82**	**90**	**99**	**109**	**119**
***FLAPS 40°**								
IAS - MPH	**50**	**60**	**70**	**80**	**90**	**100**	**110**	**120**
CAS - MPH	**63**	**69**	**76**	**84**	**92**	**101**	**110**	**119**

***MAXIMUM FLAP SPEED 120 MPH - CAS**

FIGURE 6-1

STALL SPEED - MPH CAS

GROSS WEIGHT 3600 LBS. / CONFIGURATION	ANGLE OF BANK 0°	20°	40°	60°
FLAPS UP	70	72	80	99
FLAPS 20°	64	66	73	90
FLAPS 40°	61	63	70	86

POWER OFF - AFT CG

FIGURE 6-2

TAKE-OFF DATA

TAKE-OFF DISTANCE WITH 20° FLAPS FROM HARD SURFACE RUNWAY

GROSS WEIGHT POUNDS	IAS @ 50' MPH	HEAD WIND KNOTS	AT SEA LEVEL & 59° F		AT 2500 FT & 50° F		AT 5000 FT & 41° F		AT 7500 FT & 32° F	
			GROUND RUN	TOTAL TO CLEAR 50 FT OBS	GROUND RUN	TOTAL TO CLEAR 50 FT OBS	GROUND RUN	TOTAL TO CLEAR 50 FT OBS	GROUND RUN	TOTAL TO CLEAR 50 FT OBS
3600	78	0	900	1780	1040	2055	1245	2450	1470	2925
		10	645	1400	760	1630	920	1960	1105	2365
		20	435	1055	525	1245	645	1515	785	1850
3100	72	0	645	1350	750	1535	895	1795	1055	2095
		10	455	1045	535	1195	645	1410	775	1660
		20	295	770	355	890	435	1065	530	1270
2600	62	0	400	790	470	895	555	1045	655	1220
		10	265	580	315	665	380	785	455	925
		20	155	395	190	460	235	550	285	660

NOTES: l. Increase distance 10%for each 20'F above standard temperature for particular altitude.
2 For operation on a dry, grass runway, increase distances (both ground run and total to clear 50 ft. obstacle") by 5% of the "total to clear 50 It . Obstacle" figure.

MAXIMUM RATE-OF-CLIMB DATA

GROSS WEIGHT POUNDS	AT SEA LEVEL & 59° F			AT 5000 FT & 41° F			AT 10,000 FT & 23° F			AT 15,000 FT & 5° F			AT 20,000 FT & -12° F		
	ISA MPH	RATE OF CLIMB FT/MIN.	FROM S. L. FUEL USED	ISA MPH	RATE OF CLIMB FT/MIN.	FROM S. L. FUEL USED	ISA MPH	RATE OF CLIMB FT/MIN.	FROM S. L. FUEL USED	ISA MPH	RATE OF CLIMB FT/MIN.	FROM S. L. FUEL USED	ISA MPH	RATE OF CLIMB FT/MIN.	FROM S. L. FUEL USED
3600	100	920	2	96	640	4.3	93	360	7.6	90	90	15.1	NA	NA	NA
3100	95	1190	2	91	890	3.7	87	585	5.9	83	280	9.3	NA	NA	NA
2600	90	1560	2	85	1205	3.3	81	855	4.8	77	515	6.9	71	150	10.9

NOTES:
1. Full throttle, 2700 RPM, mixture at recommended leaning schedule, flaps up.
2. With full throttle, 2850 RPM, mixture at recommended leaning schedule , rate of climb is increased by 30 ft/min.
3. Fuel used includes warm-up and take-off allowance.
4. For hot weather, decrease rate of climb 30 ft. / min. for each 10°F above standard day temperature for particular altitude.
5. With cargo pack, climb performance is 45 it/ min less than shown.

CRUISE PERFORMANCE

NORMAL LEAN MIXTURE

Standard Conditions → Zero Wind → Gross Weight - 3600 Pounds

2,500 FEET

					63 GAL (NO RESERVE)		80 GAL (NO RESERVE)	
RPM	MP	% BHP	TAS MPH	GAL/ HOUR	ENDR. HOURS	RANGE MILES	ENDR. HOURS	RANGE MILES
2550	25	78	160	16.4	3.8	610	4.9	780
	24	74	156	15.5	4.1	635	5.2	805
	23	70	153	14.6	4.3	655	5.5	835
	22	66	149	13.8	4.6	680	5.8	865
2500	25	76	158	15.9	4.0	625	5.0	795
	24	72	155	15	4.2	645	5.3	820
	23	68	151	14.2	4.4	670	5.6	850
	22	64	148	13.4	4.7	695	6.0	880
2400	25	71	154	14.8	4.2	650	5.4	830
	24	67	150	14.1	4.5	675	5.7	855
	23	63	147	13.3	4.7	695	6.0	885
	22	60	143	12	6.5	715	6.4	910
2300	25	67	150	14	4.5	675	5.7	860
	24	63	147	13.2	4.8	695	6.0	885
	23	59	143	12.5	5.0	715	6.4	910
	22	56	138	11.8	5.3	735	6.8	935
2200	25	61	145	12.9	4.9	705	6.2	895
	24	58	141	12.3	5.1	725	6.5	920
	23	55	137	11.7	5.4	740	6.9	940
	22	52	133	11.1	5.7	760	7.2	965
	21	48	128	10.4	6.0	775	7.7	985
	20	45	122	9.8	6.4	785	8.2	1000
	19	42	115	9.2	6.9	790	8.7	1005
	18	38	107	8.5	7.4	785	9.4	1000

NOTE: For cargo pack performance, refer to page 7-13.

Figure 6-4 (Sheet 1 of 5).

CRUISE PERFORMANCE

NORMAL LEAN MIXTURE

Standard Conditions → Zero Wind → Gross Weight - 3600 Pounds

5,000 FEET

					63 GAL (NO RESERVE)		80 GAL (NO RESERVE)	
RPM	MP	% BHP	TAS MPH	GAL/ HOUR	ENDR. HOURS	RANGE MILES	ENDR. HOURS	RANGE MILES
2550	25	81	165	16.9	3.7	610	4.7	775
	24	77	162	16.0	3.9	640	5.0	810
	23	72	158	15.1	4.2	660	5.3	835
	22	68	155	14.3	4.4	680	5.6	865
2500	25	78	163	16.3	3.9	630	4.9	800
	24	74	160	15.5	4.1	650	5.2	825
	23	70	157	14.7	4.3	670	5.4	850
	22	66	153	13.9	4.5	695	5.8	880
2400	25	73	159	15.2	4.1	655	5.3	835
	24	69	156	14.5	4.3	675	5.5	860
	23	66	152	13.8	4.6	700	5.8	885
	22	62	148	13	4.8	720	6.2	910
2300	25	69	155	14.4	4.4	680	5.6	865
	24	65	152	13.6	4.6	700	5.9	890
	23	61	148	12.9	4.9	720	6.2	915
	22	58	144	12.2	5.1	740	6.5	940
2200	25	63	150	13.3	4.7	710	6.0	900
	24	60	146	12.7	5.0	725	6.3	925
	23	57	142	12.0	5.2	745	6.6	945
	22	54	138	11.4	5.5	765	7.0	970
	21	50	133	10.8	5.8	780	7.4	990
	20	47	128	10.2	6.2	790	7.9	1005
	19	44	121	9.5	6.6	800	8.4	1015
	18	40	112	8.9	7.1	795	9.0	1005

NOTE: For cargo pack performance, refer to page 7-13.

Figure 6-4 (Sheet 2 of 5).

CRUISE PROFORMANCE

NORMAL LEAN MIXTURE
Standard Conditions → Zero Wind → Gross Weight - 3600 Pounds
7500 FEET

RPM	MP	% BHP	TAS MPH	GAL/ HOUR	63 GAL (NO RESERVE)		80 GAL (NO RESERVE)	
					ENDR. HOURS	RANGE MILES	ENDR. HOURS	RANGE MILES
2550	22	71	161	14.8	4.3	685	5.4	870
	21	67	157	14.0	4.5	705	5.7	895
	20	62	152	13.1	4.8	730	6.1	925
	19	58	147	12.3	5.1	755	6.5	955
2500	22	69	159	14.4	4.4	695	5.6	885
	21	65	154	13.6	4.6	715	5.9	910
	20	60	150	12.7	4.9	740	6.3	940
	19	56	145	11.9	5.3	765	6.7	970
2400	22	64	154	13.4	4.7	720	6.0	915
	21	60	149	12.7	5.0	740	6.3	940
	20	57	145	12.0	5.3	765	6.7	970
	19	53	139	11.3	5.6	780	7.1	990
2300	22	60	149	12.7	5.0	745	6.3	945
	21	56	145	12.0	5.3	765	6.7	970
	20	53	140	11.3	5.6	780	7.1	990
	19	49	133	10.6	5.9	795	7.5	1005
2200	22	55	144	11.8	5.3	765	6.8	975
	21	52	139	11.2	5.6	780	7.2	990
	20	49	133	10.6	6.0	795	7.6	1005
	19	46	126	9.9	6.4	800	8.1	1015
	18	42	117	9.3	6.8	800	8.6	1015

NOTE: For cargo pack performance, refer to page 7-13.

Figure 6-4 (Sheet 3 of 5).

CRUISE PERFORMANCE

NORMAL LEAN MIXTURE

Standard Conditions → Zero Wind → Gross Weight - 3600 Pounds

10,000 FEET

RPM	MP	% BHP	TAS MPH	GAL/ HOUR	63 GAL (NO RESERVE)		80 GAL (NO RESERVE)	
					ENDR. HOURS	RANGE MILES	ENDR. HOURS	RANGE MILES
2550	20	65	158	13.6	4.6	730	5.9	925
	19	61	153	12.8	4.9	755	6.3	960
	18	56	147	11.9	5.3	775	6.7	985
	17	52	140	11.1	5.7	795	7.2	1010
2500	20	63	156	13.2	4.8	740	6.1	940
	19	59	151	12.4	5.1	765	6.5	970
	18	55	144	11.6	5.4	785	6.9	995
	17	50	137	10.8	5.8	800	7.4	1015
2400	20	59	151	12.4	5.1	765	6.5	970
	19	55	145	11.7	5.4	785	6.9	995
	18	51	138	10.9	5.8	795	7.3	1010
	17	47	130	10.2	6.2	805	7.9	1020
2300	20	55	145	11.7	5.4	785	6.9	995
	19	51	139	11.0	5.7	795	7.3	1010
	18	48	132	10.3	6.1	805	7.8	1020
	17	44	122	9.6	6.6	805	8.3	1020
2200	20	51	138	10.9	5.8	795	7.3	1010
	19	48	131	10.3	6.1	800	7.8	1020
	18	44	123	9.6	6.5	800	8.3	1020
	17	41	113	9.0	7.0	795	8.9	1010

NOTE: For cargo pack performance, refer to page 7-13.

Figure 6-4 (Sheet 4 of 5).

CRUISE PERFORMANCE

NORMAL LEAN MIXTURE

Standard Conditions → Zero Wind → Gross Weight - 3600 Pounds

15,000 FEET

					63 GAL (NO RESERVE)		80 GAL (NO RESERVE)	
RPM	MP	% BHP	TAS MPH	GAL/ HOUR	ENDR. HOURS	RANGE MILES	ENDR. HOURS	RANGE MILES
2550	15	47	133	10.3	6	810	7.8	1030
	14	43	119	9.4	6.7	800	8.5	1015
	13	38	105	8.5	7.4	780	9.4	995
2500	15	46	128	10.0	6.3	810	8.0	1030
	14	41	115	9.1	6.9	795	8.8	1010
	13	37	102	8.3	7.6	775	9.7	985
2400	15	43	120	9.4	6.7	800	8.5	1015
	14	38	107	8.6	7.3	785	9.3	995
2300	15	40	111	8.9	7.1	790	9.0	1005
	14	36	100	8.1	7.8	775	9.9	985
2200	15	37	103	8.3	7.6	780	9.6	990
	14	33	92	7.6	8.3	765	l0.5	970

NOTE: For cargo pack performance, refer to page 7-13.

Figure 6-4 (Sheet 5 of 5).

LANDING DISTANCE TABLE

LANDING DISTANCE WITH 40° FLAPS ON HARD SURFACE RUNWAY

GROSS WEIGHT POUNDS	APPROACH IAS MPH	@ SEA LEVEL & 59°F		@ 2500 FEET & 50°F		@ 5000 FEET & 41°F		@ 7500 FEET & 32°F	
		GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS.	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS.	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS.	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS.
3600	75	735	1395	780	1480	825	1570	875	1665

NOTES: 1. Distancesn shown are based on zero wind, power off, and heavy breaking.
2. Reduce landing distances 10% for each 4 knots headwind.
3. For operation on dry, grass runway, increase distances (both "ground roll" and "total to clear 50 ft. obstacle") by 22% of "total to clear 50 ft. obstacle" figure

FIGURE 6-5

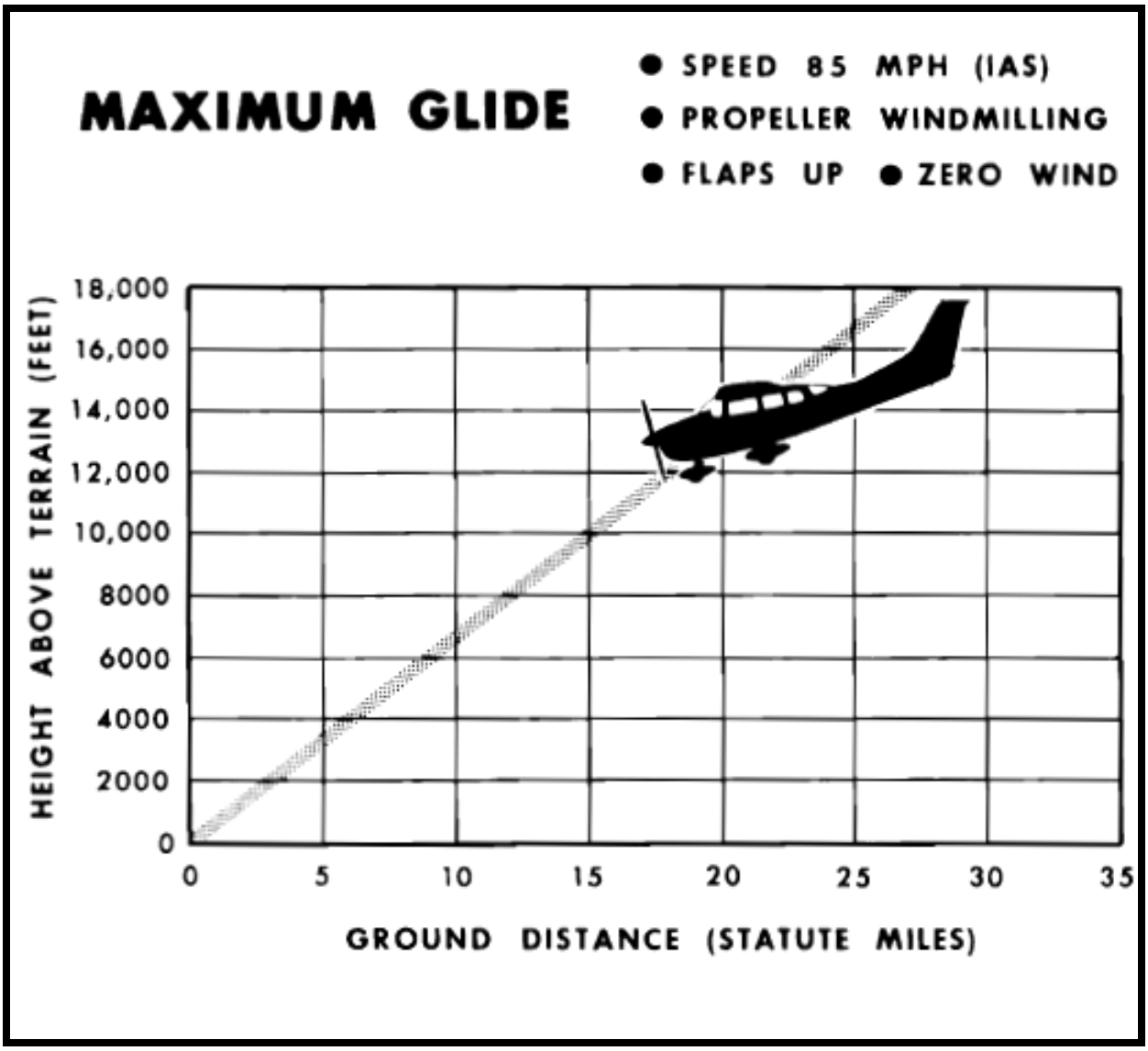


FIGURE 6-6

Section VII

OPTIONAL SYSTEMS

This section contains a description, operating procedures, and performance data (when applicable) for some of the optional equipment which may be installed in your Cessna. Owner's Manual Supplements are provided to cover operation of other optional equipment systems when installed in your airplane. Contact your Cessna Dealer for a complete list of available optional equipment.

LONG RANGE FUEL TANKS

Special wings with long range fuel tanks are available to replace the standard wings and fuel tanks for greater endurance and range. Each tank has a total capacity of 42 gallons. Usable fuel in each long range tank, for all flight conditions, is 40 gallons.

COLD WEATHER EQUIPMENT

WINTERIZATION KIT AND NON-CONGEALING OIL COOLER.

For continuous operation in temperatures consistently below 20 of, the Cessna winterization kit and non-congealing oil cooler should be installed to improve engine operation. The winterization kit consists of two shields to partially cover the cowl nose cap opening and insulation for the Crankcase breather line. Once installed, the crankcase breather insulation is approved for permanent use in both cold and hot weather. The non-congealing oil cooler replaces the standard oil cooler and provides improved oil flow through the cooler in cold weather.

GROUND SERVICE PLUG RECEPTACLE.

A ground service plug receptacle may be installed to permit the use of an external power source for cold weather starting and during lengthy maintenance work on the airplane electrical system (with the exception of electronic equipment).

NOTE

Electrical power for the airplane electrical circuits is provided through a split bus bar having all electronic circuits on one side of the bus and other electrical circuits on the other side of the bus. When an external power source is connected, a contactor automatically opens the circuit to the electronic portion of the split bus bar as a protection against damage to the transistors in the electronic equipment by transient voltages from the power source. Therefore, the external power source cannot be used as a source of power when checking electronic components.

Just before connecting an external power source (generator type or battery cart), the master switch should be turned "ON. "

The ground service plug receptacle circuit incorporates a polarity reversal protection. Power from the external power source will flow only if the ground service plug is correctly connected to the airplane. If the plug is accidentally connected backwards, no power will flow to the airplane r s electrical system, thereby preventing any damage to electrical equipment.

The battery and external power circuits have been designed to completely eliminate the need to "jumper" across the battery contactor to close it for charging a completely "dead" battery. A special fused circuit in the external power system supplies the needed "jumper" across the contacts so that with a "dead" battery and an external power source applied, turning the master switch "ON" will close the battery contactor.

ENGINE PRIMER SYSTEM.

A manually-operated, plunger type engine primer may be installed in the control pedestal.

For quick smooth engine starts in zero degree temperatures, use six strokes of the primer before cranking, with an additional one or two strokes as the engine starts. In colder temperatures, use additional priming before cranking, and turn. the auxiliary fuel pump switch on "ID" while cranking. After priming make sure the primer is full in and locked.

STATIC PRESSURE ALTERNATE SOURCE VALVE.

A static pressure alternate source valve provides continued operation of the airspeed indicator, altimeter and vertical speed indicator in the event that the static system ports or lines become obstructed. If erroneous instrument readings are suspected due to water or ice in the static pressure lines, the alternate static source valve should be opened to close off the standard system and vent the instruments to the cabin. Cabin pressures will be affected by open ventilators and window and varying airspeeds, and this will affect the instrument readings. Since an open window will cause large errors, it is recommended that it be closed whenever the alternate static system is in use.

When using the alternate static source with the window closed, the airspeed and altimeter readings will be higher than corresponding readings when using the primary source. In cruising flight, the airspeed indicator and altimeter will read approximately 4 MPH and 50 feet higher, respectively. In the climb and approach speed range, the variations are negligible.

OIL DILUTION SYSTEM.

If your airplane is equipped with an oil dilution system and very low temperatures are anticipated, dilute the oil prior to engine shut down by energizing the oil dilution switch with the engine operating at 1000 RPM. (Refer to figure 7 -1 for dilution time for the anticipated temperature.) While diluting the oil, the oil pressure should be watched for any unusual fluctuations that might indicate a screen being clogged with sludge washed down by the fuel.

NOTE

On the first operation of the oil dilution system each season, use the full dilution period, drain the oil, clean the screen, refill with new oil and redilute as required.

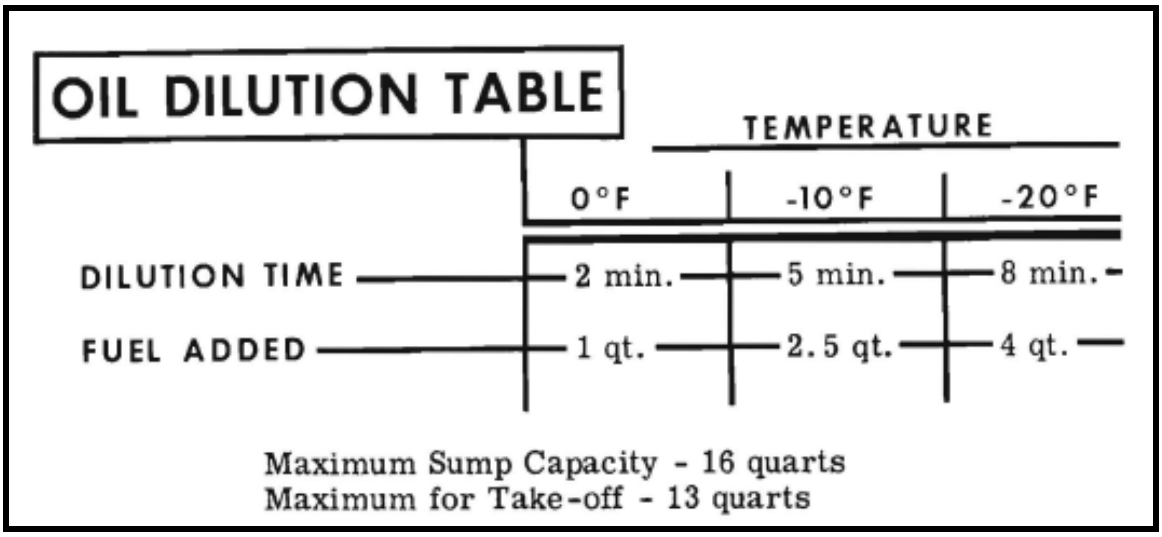


Figure 7-1.

If the full dilution time was used, beginning with a full oil sump (12 quarts), subsequent starts and engine warm-up should be prolonged to evaporate enough of the fuel to lower the oil sump level to 13 quarts prior to take-off. Otherwise, the sump may overflow when the airplane is in a nose high attitude.

To avoid progressive dilution of the oil, flights of at least two hours duration should be made between oil dilution operations.

28-VOLT ELECTRICAL SYSTEM

An optional 28-volt direct current electrical system is available for this aircraft. The system consists of a 24-volt 17 amp- hour battery, different circuit breakers, different gage wiring, additional resistors, minor wiring differences, and 24-volt electrical and electronic equipment.

RADIO SELECTOR SWITCHES

RADIO SELECTOR SWITCH OPERATION.

Operation of the radio equipment is normal as covered in the respective radio manuals. When more than one radio is installed, an audio switching system is necessary. Audio Switching is accomplished by a series of radio selector switches located at the top-center of the instrument panel. They are rectangular in shape, internally lighted, and the face of each switch is labeled to define the system it controls. The selector switches have one function when depressed and another function when extended. They are designed to lock when pushed in to the depressed position; they can be extended by pressing full in and allowing them to release to the extended position. Certain combinations of switches are interlocked to prevent more than one system from being utilized at the same time. Depressing one interlocked switch automatically disengages the others. All of the selector switches are lighted anytime the navigation light switch is turned on. When a switch is depressed, its light becomes brighter. The light intensity of a depressed switch can be controlled with the rheostat labeled "AUDIO SWITCHES" just below the selector switches. The following information describes the various selector switch functions.

TRANSMITTER SELECTOR SWITCHES.

When two transmitters are installed, the microphone must be switched to the transmitter the pilot has selected for use. To accomplish this, interlocking transmitter selector switches labeled "TR 1" and "TR 2" are provided. "TR 1" selects the upper transmitter and "TR 2" selects the lower transmitter

The installation of Cessna radio equipment provides certain audio back-up capabilities and transmitter selector switch functions that the pilot should be familiar with. When the transmitter selector switch labeled "TR 1" or "TR 2" is depressed, the audio amplifier of the corresponding transceiver is utilized to provide the speaker audio for all radios. If the audio amplifier in the selected transceiver fails, as evidenced by loss of speaker audio for all radios, depress the transmitter selector switch for the transceiver not in use. Since an audio amplifier is not utilized for head phones, a malfunctioning amplifier will not affect headphone operation.

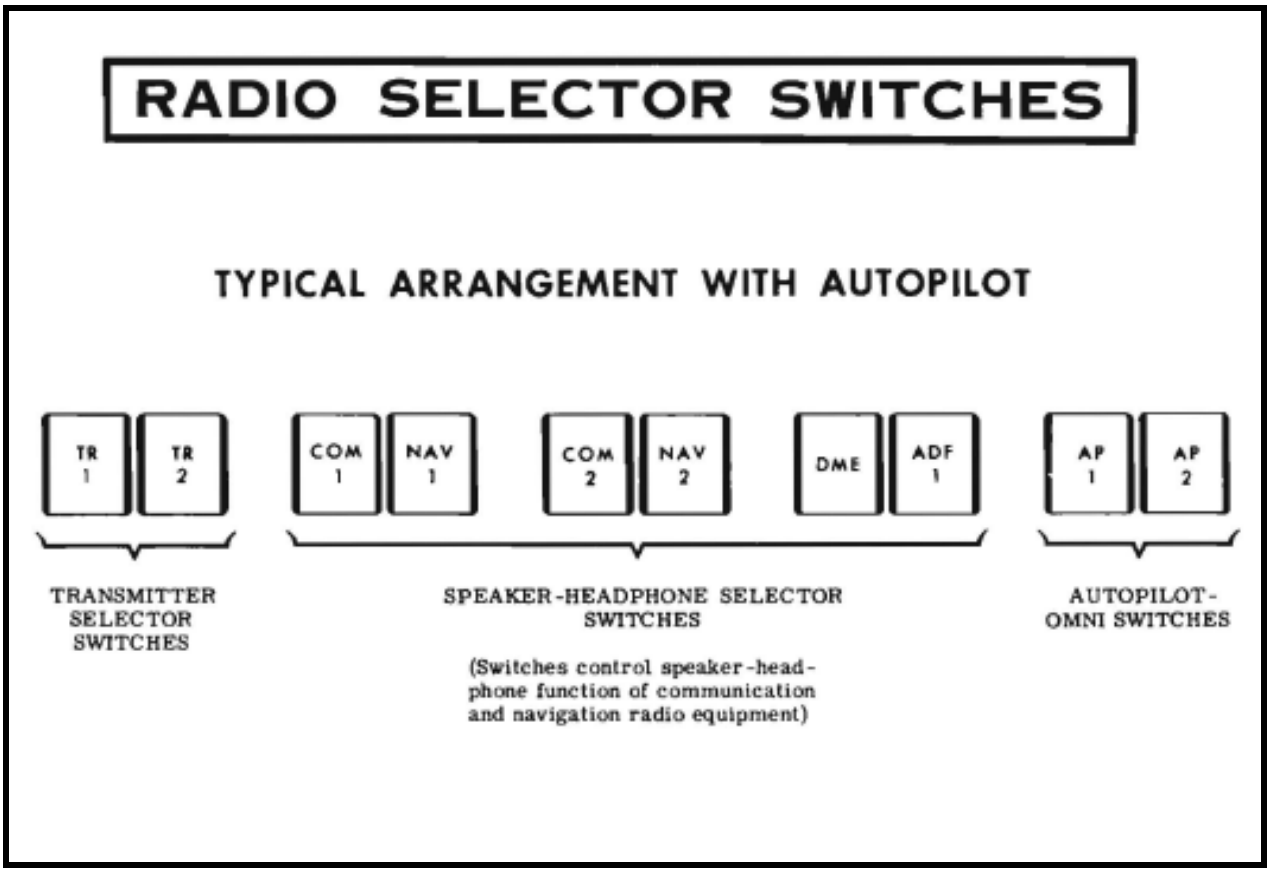


Figure 7-2.

SPEAKER - PHONE SWITCHES.

The speaker-phone switches such as "COM 1" or "NAV I" determine whether the output of the receiver in use is fed to the headphones or through the audio amplifier to the speaker. Depress the switch for the desired receiver to obtain speaker operation, or release it if headphone operation is desired.

AUTOPILOT-OMNI SWITCHES.

When a Nav-O-Matic autopilot is installed with two compatible omni receivers, two autopilot-omni switches labeled "AP 1" and "AP 2" are utilized. These switches select the omni receiver to be used for the omni course sensing function of the autopilot. This is accomplished 'by depressing the selector switch corresponding to the receiver which is to be used.

BOOM MICROPHONE

A boom microphone may be mounted near the upper left corner of the windshield. Use of the boom microphone allows radio communication without the necessity of releasing any controls to handle the normal hand microphone. The microphone keying switch is a push button located on the left side of the pilot's control wheel.

STATIC DISCHARGERS

lf frequent IFR flights are planned, installation of optional static dischargers is recommended to improve radio communications during flight through dust or various forms of precipitation (rain, freezing rain, snow or ice crystals). Under these conditions, the build-up and discharge of static electricity from the wing tips, trailing edges of the wings, rudder, elevators, propeller tips and radio antennas, can result in loss of usable radio signals on all communications and navigation radio equipment. (Usually the ADF is first to be affected and VHF communication equipment is the last to be affected).

Installation of the static dischargers reduces interference from precipitation static, but it is possible to encounter severe precipitation static conditions which might cause the loss of radio signals, even with static dischargers installed. Whenever possible, avoid known severe precipitation areas to prevent loss of dependable radio signals. lf avoidance is impractical, minimize airspeed and anticipate temporary loss of radio signals while in these areas.

OXYGEN SYSTEM

An oxygen cylinder, located in the fuselage tailcone, supplies oxygen for the system. Cylinder pressure is reduced to an operating pressure of 70 psi by a pressure regulator attached to the cylinder. A shutoff valve is included as part of the regulator assembly. An oxygen cylinder filler valve is located on the left side of the fuselage tailcone (under a cover plate). Cylinder pressure is indicated by a pressure gage located in the overhead oxygen console above the pilot's and front seat passenger's seats.

Six oxygen outlets are provided; two in the overhead oxygen console and four in the cabin ceiling just above the side windows (one at each of the rear seating positions). One permanent, microphone equipped mask is provided for the pilot, and five disposable type masks are provided for the passengers. All masks are the partial rebreathing type, equipped with vinyl plastic hoses and flow indicators.

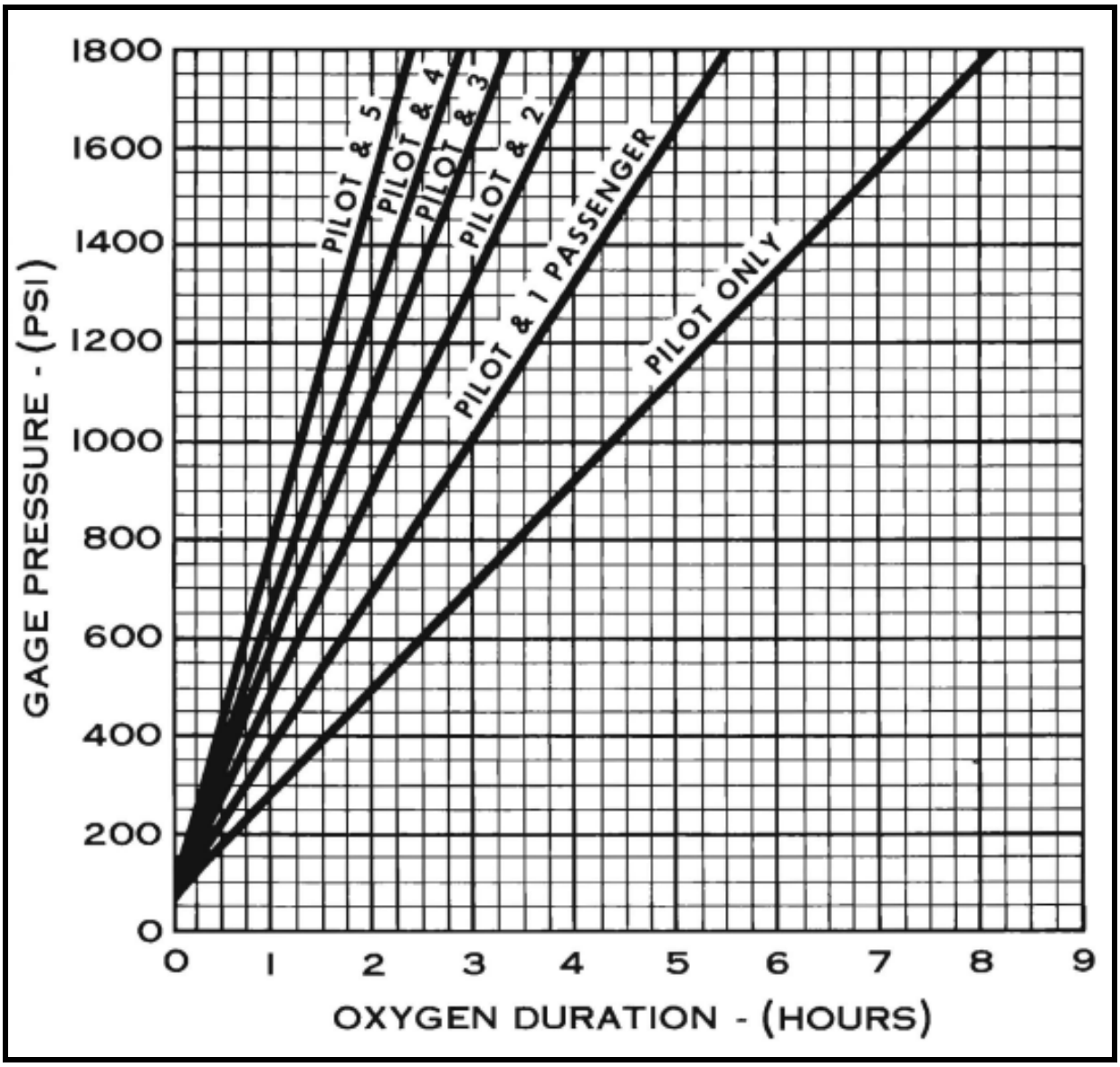
A remote shutoff valve control, located adjacent to the pilot's oxygen outlet in the overhead oxygen console, is used to shut off the supply of oxygen to the system when not in use. The control is mechanically connected to the shutoff valve at the cylinder. With the exception of the shutoff function, the system is completely automatic and requires no manual regulation for change of altitude.

OXYGEN SYSTEM OPERATION.

Prior to flight, check to be sure that there is an adequate oxygen supply for the trip, by noting the oxygen pressure gage reading. Refer to paragraph OXYGEN DURATION CALCULATION, and to the Oxygen Duration Chart (figure 7-3). Also, check that the face masks and hoses are accessible and in good condition.

Supplemental oxygen should be used by all occupants when cruising above 10,000 feet. As described in the Cessna booklet "Man At Altitude, " it is often advisable to use oxygen at altitudes lower than 10,000 feet under conditions of night flying, fatigue, or periods of physiological or emotional disturbances. Also, the habitual and excessive use of tobacco or alcohol will usually necessitate the use of oxygen at less than 10,000 feet.

OXYGEN DURATION CHART
(48 CUBIC FEET CAPACITY)



NOTE: This chart is based on a pilot with an orange color-coded oxygen line fitting and passengers with green color-coded line fittings.

Figure 7-3.

NOTE

For safety reasons, no smoking should be allowed in the aircraft while oxygen is being used.

When ready to use the oxygen system, proceed as follows:

(1) Select mask and hose.

NOTE

The hose provided for the pilot is of a higher flow rate than those for the passengers; it is color-coded with an orange band adjacent to the plug-in fitting. The passenger hoses are color- coded with a green band. If the aircraft owner prefers, he may provide higher flow hoses for all passengers. In any case, it is recommended that the pilot use the larger capacity hose. The pilot's mask is equipped with a microphone to facilitate use of the radio while using oxygen. An adapter cord is furnished with the microphone-equipped mask to mate the mask microphone lead to the "AUX MIKE JACK" located under the left side of the instrument panel. To connect the oxygen mask microphone, connect the mask lead to the adapter cord and plug the cord into the "AUX MIKE JACK." (In aircraft that are equipped with the optional boom microphone, it will be necessary to disconnect the boom microphone lead from the "AUX MIKE JACK" so that the adapter cord from the oxygen mask microphone can be plugged into the jack.) A switch is incorporated on the left hand control wheel to operate the microphone.

(2) Attach mask to face and adjust metallic nose strap for snug mask fit.

(3) Select oxygen outlet located nearest to the seat you are occupying, and plug delivery hose into it. When the oxygen supply is turned on, oxygen will flow continuously at the proper rate of flow for any altitude without any manual adjustments.

(4) Position oxygen supply control knob "ON. "

(5) Check the flow indicator in the face mask hose. Oxygen is flowing if the indicator is being forced toward the mask.

(6) Unplug the delivery hose from the outlet coupling when discontinuing use of oxygen system. This automatically stops the flow of oxygen.

(7) Position oxygen supply control knob "OFF. "

OXYGEN DURATION CALCULATION.

The Oxygen Duration Chart (figure 7-3) should be used in determining the usable duration (in hours) of the oxygen supply in your airplane. The following procedure outlines the method of finding duration from the chart.

(1) Note the available oxygen pressure shown on the pressure gage.
(2) Locate this pressure on the scale on the left side of the chart, then go across the chart horizontally to the right until you intersect the line representing the number of persons making the flight. After intersecting the line, drop down vertically to the bottom of the chart and read the duration in hours given on the scale.
(3) As an example of the above procedure, 1400 psi of pressure will safely sustain the pilot only for nearly 6 hours and 15 minutes. The same pressure will sustain the pilot and three passengers for approximately 2 hours and 30 minutes.

NOTE

The Oxygen Duration Chart is based on a standard configuration oxygen system having one orange color –coded hose assembly for the pilot and green color-coded hoses for the passengers. lf orange color-coded hoses are provided for pilot and passengers, it will be necessary to compute new oxygen duration figures due to the greater consumption of oxygen with these hoses. This is accomplished by computing the total duration available to the pilot only (from "PILOT ONLY" line on chart), then dividing this duration by the number of persons (pilot and passengers) using oxygen.

OXYGEN SYSTEM SERVICING.

The oxygen cylinder, when fully charged, contains approximately 48 cubic feet of oxygen, under a pressure of 1800 psi at 70 of. Filling pressures will vary, however, due to the ambient temperatures in the filling area, and because of the temperature rise resulting from compression of the oxygen. Because of this, merely filling to 1800 psi will not result in a properly filled cylinder. Fill to the pressures Indicated in the table on the following page for the ambient temperature.

AMBIENT TEMPERATURE °F	FILLING PRESSURE PSIG	AMBIENT TEMPERATURE °F	FILLING PRESSURE PSIG
0	1600	50	1825
10	1650	60	1875
20	1700	70	1925
30	1725	80	1975
40	1775	90	2000

IMPORTANT

Oil, grease, or other lubricants in contact with oxygen create a serious fire hazard, and such contact must be avoided when handling oxygen equipment.

3-BLADED PROPELLER

A Cessna-Crafted three-bladed propeller is optionally offered. This option provides greater propeller/ground clearance for rough field operation and slightly smoother operation at cruise. However, there is no significant performance change with the three-bladed propeller.

CARGO PACK

FLIGHT OPERATION WITH A CARGO PACK.

All flight characteristics for a cargo pack equipped aircraft are identical to an aircraft without a cargo pack. There is, however, a slight climb and cruise performance differential between the two aircraft.

The climb performance of the aircraft equipped with a cargo pack is approximately 45 ft/min less than that shown in the MAXIMUM RATE-OF-CLIMB DATA table for the standard airplane.

To obtain the speed performance for the aircraft equipped with a cargo pack, the speed differentials shown in the table below should be subtracted from the TAS MPH figures shown in the CRUISE PERFORMANCE tables for the standard airplane. Cruising range is computed by multiplying the cargo pack TAS by the endurance.

For cargo loading, refer to Section IV.

SPEED DIFFERENTIAL TABLE

% BHP	SPEED DIFFERENTIAL MPH
75	-5
65	-5
55	-5
45	-6
35	-8

Figure 7-4.

CESSNA ECONOMY MIXTURE INDICATOR

The Cessna Economy Mixture Indicator is an exhaust gas temperature (EGT) sensing device which visually aids the pilot in obtaining either an efficient maximum power mixture or a desired cruise mixture. Exhaust gas temperature varies with cylinder fuel-to-air ratio, power, and RPM.

OPERATING INSTRUCTIONS.

The reference EGT must be known before the EGT indicator can be used for take-off and climb. Determine the reference EGT periodically as follows:

(1) Establish 65% power in level flight at 2550 RPM and part throttle.
(2) Carefully lean to peak EGT. This is the reference EGT.

NOTE

Operation at peak EGT is not authorized for continuous operation, except to establish peak EGT for reference at 75% power or less. Operation on the lean side of peak EGT or within 25 0 of peak EGT is not approved.

FLIGHT CONDITION	POWER SETTING	EGT	REMARKS
TAKE-OFF	Full throttle 2850 RPM	150° to 200° F richer than REFERENCE EGT	Use FULL RICH mixture below 3000'
CLIMB	Full throttle 2700 RPM		
NORMAL CLIMB	25" MP and 2550 RPM	125° richer than REFERENCE EGT	Above 10,000' use BEST POWER mixture
MAXIMUM CRUISE SPEED	75% or less	Peak minus 75° F (ENRICHEN)	BEST POWER mixture, 2 MPH TAS increase and 6% range loss from NORMAL LEAN
NORMAL CRUISE	75% or less	Peak minus 25° F (ENRICHEN)	NORMAL LEAN mixture-Owner's Manual and Power Computer performance

The chart on page 7 -14 should be used to establish mixture settings in take-off, climb and cruise conditions.

The yellow index pointer may be set at the reference point, or to a specific point to lean to. It can be positioned manually by turning the screw adjustment on the face of the instrument.

For maximum performance take-off, mixture may be set during static full power runup, if feasible, or during the ground roll.

NOTE

Enrichen mixture during climb if excessive cylinder head temperatures occur.

In the event that a distinct peak is not obtained, use the corresponding maximum EGT as the reference point for enriching the mixture to the desired cruise setting.

Changes in altitude or power setting require the EGT to be rechecked. Mixture may be controlled in cruise descent by simply enriching to avoid engine roughness. During prolonged descents, maintain sufficient power to keep the EGT needle on scale. In idle descents or landing approaches use full rich mixture. For idle descents or landing approaches at high elevations, the mixture control may be set in a position to permit smooth engine acceleration to maximum power.

WING LEVELER

A wing leveler may be installed to augment the lateral stability of the airplane. The system uses the Turn Coordinator for roll and yaw sensing. Vacuum pressure, from the engine-driven vacuum pump, is routed from the Turn Coordinator to cylinder-piston servo units attached to the aileron control system. As the airplane deviates from a wing level attitude, vacuum pressure in the servo units is increased or relieved as needed to actuate the ailerons to oppose the deviations.

A separately mounted push-pull control knob, labeled 'WING LVLR " is provided on the left side of the instrument panel to turn the system on and off. A "ROLL TRIM" control knob on the Turn Coordinator is used for manual roll trim control to compensate for asymmetrical loading of fuel and passengers, and to optimize system performance in climb, cruise and let-down.

OPERATING CHECK LIST

TAKE-OFF.

(1) "WING LVLR" Control Knob -- Check in off position (full in).

CLIMB.

(1) Adjust elevator and rudder trim for climb.
(2) "WING LVLR" Control Knob -- Pull control knob "ON. "
(3) "ROLL TRIM" Control Knob -- Adjust for wings level attitude.

CRUISE.

(1) Adjust power, elevator and rudder trim for level flight.
(2) "ROLL TRIM" Control Knob -- Adjust as desired.

DESCENT.

(1) Adjust power, elevator and rudder trim for desired speed and rate of descent.
(2) "ROLL TRIM" Control Knob -- Adjust as desired.

LANDING.

(1) Before landing, push "WING LVLR" control knob full in to the off position.

EMERGENCY PROCEDURES

If a malfunction should occur, the system is easily overpowered with pressure on the control wheel. The system should then be turned off. In the event of partial or complete vacuum failure, the wing leveler will automatically become inoperative. However, the Turn Coordinator used with the wing leveler system will not be affected by loss of vacuum since it is designed with a "back-up" system enabling it to operate from either vacuum or electrical power in the event of failure of one of these sources.

OPERATING NOTES

(1) The wing leveler system may be overpowered at any time without damage or wear. However, for extended periods of maneuvering it may be desirable to turn the system off.

(2) It is recommended that the system not be engaged during take-off and landing. Although the system can be easily overpowered, servo forces could significantly alter the manual "feel" of the aileron control, especially should a malfunction occur.

FUEL QUICK-DRAIN VALVE KIT

Four fuel system quick-drain valves and a fuel sampler cup are available as a kit to facilitate daily draining and inspection of fuel in the wing tanks and fuel reservoir tanks for the presence of water and sediment. The valves replace existing wing tank drain plugs located at the lower inboard area of the wing and reservoir tank drain plugs located on the bottom of the fuselage adjacent to the wing struts. The fuel sampler cup, which may be stowed in the map compartment, is used to drain the valves.

The sampler cup has a probe in the center of the cup. When the probe is inserted into the hole in the bottom of the drain valve and pushed upward, fuel flows into the cup to facilitate visual inspection of the fuel. As the cup is removed, the drain valve seats, stopping the flow of fuel.

OIL QUICK-DRAIN VALVE.

An oil quick-drain valve is optionally offered to replace the drain plug in the oil sump drain port. The valve provides a quicker and cleaner method of draining engine oil. To drain the oil with this valve installed, slip a hose over the end of the valve, route the hose to a suitable container, then push upward on the end of the valve until it snaps into the open position. Spring clips will hold the valve open. After draining, use a screwdriver or suitable tool to snap the valve into the extended (closed) position and remove the drain hose.

SKYDIVING KIT

A kit is available as optional equipment to facilitate skydiving operations. The kit consists of a spoiler, skydiver steering switch, and a steering signal light console. The spoiler is installed on the door hinges of the removed front cargo door to minimize the strong air flow buffeting within the cabin when the cargo doors are removed. The rocker-type steering switch is mounted inside the cabin on the upper sill of the cargo door opening and is used by the skydiver to signal the pilot of his desired flight path over the drop zone. A steering signal light console, with red and green lights controlled by operation of the steering switch, is mounted on top of the instrument panel. Illumination of the red light indicates to the pilot that the diver desires that the aircraft be steered left; conversely, a green light shows that the pilot is to steer right.

OPERATING DETAILS

For skydiving operations, removal of both cargo doors is suggested, since exit through a single door would be difficult with the spoiler obstructing part of the door opening. Installation of the spoiler substantially reduces air flow buffeting in the cabin; however, all loose equipment, including head rests, rear window sun shade, removable arm rests, safety belts, etc., should be removed or secured. Fifth and sixth seat passengers will receive a strong

air blast, and face protection in the form of goggles and helmet is recommended.

Removal of the cargo doors also necessitates the installation of a depressor plate over the wing flap circuit interrupt switch to permit flap operation with doors removed. (Under normal operations with the cargo doors installed, the switch prevents flap operation whenever the front cargo door is open to prevent accidental damage to the door or wing flap if the flaps are lowered.)

With the cargo doors removed, flight characteristics are essentially unchanged, except that slightly different directional trim may be needed. Seating accommodations for as many as five skydivers are more easily provided by removing the right center seat and the copilot seat, and allowing these divers to sit on the floor back-to-back. An extra long seat belt (attached to the copilot seat belt anchor points) is needed to restrain the rearward facing diver having a back-pack parachute.

TRUE AIRSPEED INDICATOR.

A true airspeed indicator is available to replace the standard airspeed indicator in your airplane. The true airspeed indicator has a calibrated rotatable ring which works in conjunction with the airspeed indicator dial in a manner similar to the operation of a flight computer.

<u>TO OBTAIN TRUE AIRSPEED,</u> rotate ring until pressure altitude is aligned with outside air temperature in degrees Fahrenheit. Then read true airspeed on rotatable ring opposite airspeed needle.

NOTE

Pressure altitude should not be confused with indicated altitude. To obtain pressure altitude, set barometric scale on altimeter to "29.92" and read pressure altitude on altimeter. Be sure to return altimeter barometric scale to original barometric setting after pressure altitude has been obtained.

STOWABLE RUDDER PEDALS

Stowable right-hand rudder pedals are available as part of the optional right-hand flight controls installation. The pedals fold forward and stow against the firewall, thereby permitting the right front passenger to extend his feet forward for greater comfort, and also to rest his feet on the rudder pedals during flight without, in any way, interfering with the flight operation of the pilot's rudder pedals.

A push-pull control on the instrument panel actuates the pedal unlocking mechanism. The pedals are stowed simply by squeezing the double buttons of the control knob and pulling the knob out to release the pedals; the pedals can then be pushed forward against the firewall where they are retained by spring clips within a bracket. The pedals are restored to their operating positions by pushing the control knob full in, and inserting the toe of the shoe underneath each pedal and pulling each pedal aft until it snaps into position. The pedals are again ready for flight use by the right front passenger.

ELECTRIC ELEVATOR TRIM SYSTEM

An electric elevator trim system is available to facilitate trimming the airplane. The system is controlled by a switch on the left side of the pilot's control wheel. Pushing the switch forward, labeled "DN", moves the elevator trim tab in the "nose-down" direction; conversely, pushing the switch aft, labeled "UP", moves the tab in the "nose-up" direction. When the switch is released, it automatically returns to the center (off) position and elevator tab motion stops.

A servo unit (which includes a motor and a chain-driven, solenoid-operated clutch) in the fuselage actuates the trim tab to the selected position. When the clutch is not energized (trim switch off), the electric portion of the trim system freewheels so that manual operation is not affected. The electric trim system can be overridden at any time by the manual system, if necessary.

Should the electric trim malfunction and run continuously, stop the trim wheel motion by grasping it firmly between the thumb and forefinger. Then pull the circuit breaker switch (located on the control pedestal), and manually retrim the aircraft as required. The electric trim circuit breaker switch should remain pulled for the remainder of the flight.

FAA APPROVED
AIRPLANE/ROTORCRAFT FLIGHT MANUAL SUPPLEMENT OR
SUPPLEMENTAL AIRPLANE FLIGHT MANUAL (INCLUDING POH AND FAA AFM)
(FOR THOSE AIRCRAFT WITHOUT A BASIC AIRPLANE FLIGHT MANUAL)

EGT-701 TEMPERATURE INDICATOR
FOR

Single and Twin Reciprocating Engine Powered Aircraft as listed on Master Eligibility List of

STC SA2586NM.

REG. NO. N9554G

SER. NO. U20601754

This Supplement must be attached to the FAA Approved Airplane/Rotorcraft Flight Manual when the J.P Instruments EGT-701 is installed in accordance with Supplemental Type Certificate SA 2586NM. For those airplanes without a basic Airplane Flight Manual, the Supplemental AFM must be in the aircraft when the EGT-701 is installed.

The information contained in this Airplane/Rotorcraft Flight Manual Supplement/ Supplemental Aircraft Flight Manual supplements or supersedes the basic manual/ placards only in those areas listed. For limitations, procedures and performance information not contained in this supplement, consult the basic Airplane Flight manual, Markings and Placards.

FAA APPROVED.

Donald Armstrong

Manager, Flight Test Branch, ANM-160L
Federal Aviation Administration
Los Angeles Aircraft Certification Office
Transport Airplane Certification Directorate

Date: Nov. 12, 1992

Revision No.	Description	Affected Pages	Approval
Original	Complete Flight Manual Supplement for EGT-701	1 thru 4	Mgr. Flt. Test Br. ANM-160L FAA, LA ACO Transport Airplane Directorate Date 11-12-92
A	Added Fuel Flow features & Switch.	2 thru 4	Mgr. Flt. Test Br. ANM-160L FAA, LA ACO Transport Airplane Directorate Date 12-13-96
B	Added RPM and Manifold Pressure features	2 thru 4	Mgr. Flt. Test Br. ANM-160L FAA, LA ACO Transport Airplane Directorate Date 6-17-99

1-GENERAL

The EGT-701 temperature indicator displays temperature digitally and in analog format. The EGT as displayed is based on probes located near the exhaust outlet for each cylinder and the TIT probe, if installed, is adjacent to the turbo charger. These probes are not necessarily collocated with the primary probes therefore, EGT-701 may not indicate the same as the aircraft primary instruments. The analog display is an electronic bar graph (vertical columns, one per cylinder) of EGT & TIT temperatures presented as a percentage of 1650°F. Below the vertical columns the specific value for EGT and CHT are displayed digitally. The dot over the column indicates which cylinder's digital information is presently displayed. The missing bars at the base of the columns indicates the hottest and coldest Cylinder Head temperature trend . During Lean Find mode the leanest cylinder is displayed along with the fuel flow (optional) at that time. Depressing the LF and STEP button simultaneously brings up the adjustable scan rate function, OAT in °C or °F. Depress the LF button will change the value of the rate or OAT in °C or °F. Exit by Depressing STEP.

If the EGT-701 buttons are not depressed for 10 minutes the system will start scanning automatically. Depressing the STEP button will stop the automatic scan and index through all the functions available. During constant power cruise, if the the LF button is depressed for five seconds the bargraph will level at mid scale. The leveled bars represent the peaks of each column. Each bar represents 10 °F and now acts as an EGT & TIT trend monitor, quickly showing an increase or decrease in temperature. Depress again to return to normal; nothing else is affected. With the fuel flow option there is a three position toggle switch. The positions are: 1) **EGT**, digital and bargraph display of temperatures. 2) **FF**, digital display of GPH, REM and USED Fuel. Temperature bargraph remains. 3) **Both**, cycles through everything installed. The data port output, sends RS232 serial data every 6-sec.

Options of Fuel Flow, TIT, OAT, IAT (induction air temp.), OIL, BAT (voltage) and are only displayed digitally with headlines after the number, as "230 OIL" or "14 GPH". A large value (50 +) of "CLD" indicates shock cooling usually associated with rapid descents at low power. Optional functions not installed will not display. RPM is displayed constantly in the upper display with no alarms. MAP is shown in the scan display.

Alarm limits set for this instrument if different from JPI limits.

CHT_____
OIL_____
TIT_____
DIF_____
CLD_____
BAT_____
TECH_____
DATE_____

RPM

Step button Lean button

P/N EGT-701

GENERAL (cont.)

An alarm causes the digital function to flash as soon as the particular limit is exceeded. Factory set alarm limits for CHT (450°F) and OIL (230°F) are lower than the actual aircraft limits and can not be set by the pilot. The values may be adjusted to suit individual preference by a qualified technician. Other factory set alarm limits are: "BAT" Voltage 15.5/11.0 or 31.0/22.0 Hi/Lo as appropriate; "DIF" (differential Hi/Lo EGT) 500°F, "TIT" 1650°F Hi; "OIL" Lo 90°F; "CLD" (Rate of change of cylinder head temperature in degrees per minute) -60 degrees/minute. The pilot should be aware of the setting of each alarm for his particular aircraft. An alarm is "Canceled" by holding the step button in for 5 seconds and seeing the word "OFF" Then, only that particular alarm is canceled. Canceled alarms will not appear again until the power has been removed and reapplied to the EGT-701 The entire display dims automatically depending on the ambient lighting.

The Cylinder Head with the Gasket probe and oil temperature will indicate generally higher temperatures than instruments provided by the aircraft manufacturer because the EGT-701 sensing thermocouples are not collocated with the primary instrument sensing probes. Therefore, airplane flight manual limitations based on primary instrument indication take precedence over those of the EGT-701

II OPERATING LIMITATIONS

A. The EGT-701 may not replace any existing instrument or indicator required by the aircraft type design or operating limits.

B. The EGT-701 display may not be used in lieu of, or to supersede, engine operating limitations established by the airframe or engine manufacturer during certification.

III. EMERGENCY PROCEDURES

No change

IV. NORMAL PROCEDURES

CAUTION

Comply with manufacturer's Airplane
Flight Manual leaning procedure.
Do not exceed applicable engine
or aircraft limitations.

After establishing desired cruise power depress the LF button to activate the Lean Find Mode. As the mixture is leaned, one column on the EGT-701 display will begin blinking, indicating the exhaust gas temperature for that cylinder has peaked showing its digital value along with the fuel flow (option) at that time. Continue with the leaning procedure as recommended by the aircraft manufacturer while monitoring the primary engine instruments and the EGT-701 display. Once the leaning procedure has been completed, depress the Step button briefly to exit the Lean Find Mode and enter the Monitor Mode.

FAA APPROVED_____

SERVICING REQUIREMENTS

Fuel:

AVIATION GRADE -- 100/130 Minimum Grade

(100/130 low lead aviation fuel with a lead content limited to 2 c. c. per gallon is also approved.)

CAPACITY EACH STANDARD TANK -- 32. 5 Gallons

CAPACITY EACH LONG RANGE TANK -- 42.0 Gallons

ENGINE OIL:

AVIATION GRADE - - SAE 50 Above 40 ° F.

SAE 10W30 or SAE 30 Below 40°F.

(Multi-viscosity oil with a range of SAE 1OW30 is recommended for improved starting in cold weather. Detergent or dispersant oil, conforming to Continental Motors Specification MHS-24A, must be used.)

CAPACITY OF ENGINE SUMP -- 12 QUARTS

(Do not operate on less than 9 quarts. To minimize loss of oil through breather, fill to 10 quart level for normal flights of less than 3 hours. For extended flight, fill to 12 quarts. If optional oil filter is installed, one additional quart is required when the filter element is changed.)

HYDRAULIC FIUID:

MIL-H-5606 HYDRAULIC FLUID

OXYGEN:

AVIATOR'S BREATHING OXYGEN -- SPEC. NO. MIL-O-27210

MAXIMUM PRESSURE -- 1800 PSI at 70°F.

(Cylinder temperature stabilized after filling)

Refer to page 7-12 for filling pressures.

TIRE PRESSURE:

MAIN WHEELS -- 42 PSI on 6.00 - 6, 6-Ply Rated Tires

-- 35 PSI on 8.00 - 6, 6-Ply Rated Tires (Opt)

NOSE WHEEL -- 49 PSI on 5.00 - 5, 6-Ply Rated Tire

-- 29 PSI on 6.00 - 6, 4-Ply Rated Tire (Opt)

NOSE GEAR SHOCK STRUT:

Keep filled with hydraulic fluid and inflated with air to 80 PSI.

"TAKE YOUR CESSNA HOME
FOR SERVICE AT THE SIGN
OF THE CESSNA SHIELD"

CESSNA AIRCRAFT COMPANY

WICHITA, KANSAS